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PROBLEMS

OF

LIFE AND MIND

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BY

GEORGE HENRY LEWES

Third Series

PROBLEM THE FIRST

THE STUDY OF PSYCHOLOGY

ITS OBJECT, SCOPE, AND METHOD

LONDON
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THE

STUDY OF PSYCHOLOGY

ITS OBJECT, SCOPE, AND METHOD

BY

GEORGE HENRY LEWES

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NOTICE.

THE following Problem is published separately in obedience to an implied wish of the Author, and has been printed from his manuscript with no other alterations than such as it is felt certain that he would have sanctioned.

Another volume will appear in the autumn.

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PROBLEM I.

THE STUDY OF PSYCHOLOGY;

ITS OBJECT, SCOPE, AND METHOD.

"Ψυχῆς οὖν φύσιν ἀξίως λόγου κατανοῆσαι οἴει δυνατὸν εἶναι ἄνευ τῆς τοῦ ὅλου φύσεως;"

PLATO: *Phædrus.*

"Kaum giebt es eine Wissenschaft, über deren Standpunkt und Entwicklungsstufe grössere Zweifel und Widersprüche herrschen, als die Wissenschaft der Seele. Während den Einen die Psychologie längst ausgelebt, keiner erheblichen Weiterbildung mehr fähig scheint, sind Andere der Meinung, dass sie kaum erst in den Anfängen ihrer Entwicklung begriffen sei."

WUNDT: *Vorlesungen über die Menschen und Thierseele,* 1863, i. 1.

THE STUDY OF PSYCHOLOGY.

CHAPTER I.

THE OBJECT.

1. In every science we define the object and scope of the search, the motive of the search, and the means whereby the aim may be reached. The purpose of the following pages is to set forth *what* it is we study in Psychology, *why* we study it, and *how* we ought to study it.

A glance at the literature of the subject discloses the utmost discordance on these cardinal points. The conceptions of the object and scope are different, and lead to the adoption of antagonistic methods. On the one side stands the ancient metempirical conception of a so-called Rational Psychology, with its deductive method of ontological research. Its adherents, even when condescending to what they call Empirical Psychology, so little regard the data of Experience, that they quietly ignore the complex conditions of the living organism, and treat mental facts simply as the manifestations of a Psychical Principle, at once unknowable and intimately known, a mysterious agent revealed to Consciousness. On the other hand, there is an empirical school which professes to

confine itself to the data of Experience, and to pursue the inductive method: discountenancing Ontology, and coquetting with Physiology. This school keeps up the traditions of a Psychical Principle independent of the organism, and of Introspection as the exclusive method of research. Of late years there have arisen writers who have tried to effect a compromise: invoking physiological data for one class of facts, and only invoking the Psychical Principle where physiological data fell short.

The development of the science has been along three lines: Locke, Berkeley, Hume, Condillac, Hartley, and James Mill made imperishable contributions to the introspective analysis of the phenomena in their mental aspect. Cabanis, Gall, and recent physiologists, have brought into prominence the physical aspect, revealing many of the biological conditions. Lotze, Wundt, Bain, Spencer, Taine, combine and complete these efforts of subjective and objective research, and have given the science a new impulse by their thorough and constant recognition of the twofold aspect of the phenomena.

2. And yet the *constitution* of the science has still to be effected. The constitution of a science means, 1°, that *circumscription* of a class of phenomena which, while marking its relations to other classes, assigns it a distinctive position in the series of the sciences; 2°, that *specification* of the object and method of search which, when aided by fundamental inductions established on experiment, enables all future inquiries to converge towards a self-sustaining and continuous development. In a science thus constituted, the discovery of to-day enlarges without

overturning the conceptions of yesterday. Each worker brings his labours as a contribution to a common fund, not as an anarchical displacement of the labours of predecessors. Henceforward there is system, but no systems: schools and professors no longer give their names as authorities in place of reasons. Astronomy, to take one example, is in constant progress, but the progress is that of evolution, not revolution; and the doctrines taught are not taught as Copernican, Newtonian, or Laplacian, but as astronomical. Physics and Chemistry advance with rapid strides to a fuller and more exact appreciation of their respective phenomena. The same may be said of Biology, but cannot be said of Psychology. We still hear of the Intuitional Psychology and the Sensational School. We are referred to the Psychology of Kant or Hegel, of Locke or Spencer, as if the doctrines taught were still individual appreciations of the facts on the guarantee of each author's renown.

3. Nevertheless, while this is assuredly the present state of the study, and one which is anomalous, the materials exist whereby "a first approximation" to the constitution of the science may be made. Neither introspective analysis alone, nor objective observation alone, nor even the union of the two, if confined to the investigation of the individual mind and individual organism, will suffice. Psychology investigates the Human Mind, not an individual's thoughts and feelings; and has to consider it as the product of the Human Organism not only in relation to the Cosmos, but also in relation to Society. For man is distinctively a social being; his animal impulses are pro-

foundly modified by social influences, and his higher faculties are evolved through social needs. By this recognition of the social factor as the complement to the biological factor, this recognition of the Mind as an expression of organic and social conditions, the first step is taken towards the constitution of our science.

The credit of this conception is due to Auguste Comte. Others before him had of course recognised the fact that social conditions greatly influenced mental evolution; the fact was transparent, but no one had seized its full significance. Nor do I think that even Comte saw more than its general range. His abstention from analysis and detailed investigation kept him from specifying the mode of operation of the social factor; and his "cerebral theory," so unsatisfactory in its method, and so fantastic in its anatomy, could not supply what he left unspecified.

4. It is not enough to transfer the point of view from the individual to the race, and to take the social factor into account; we must also frankly accept the biological point of view, which regarding mental functions as vital functions, and states of consciousness as separable from states of the organism only in our mode of apprehending them, sets aside the traditional conception of the Mind as an agent apart from the organism. This premised, we may define the object of our search somewhat thus:

> Psychology is the analysis and classification of the *sentient functions and faculties*, revealed to observation and induction, completed by the reduction of them to their *conditions of existence*, biological and sociological.

An organism when in action is only to be understood by understanding both it and the medium *from* which it draws its materials, and *on* which it reacts. Its conditions of existence are first the structural mechanism, and, secondly, the medium in which it is placed. When we know the part played by the mechanism, and the part played by the medium, we have gone as far as analysis can help us; we have scientifically explained the actions of the organism. This, which is so obvious in reference to vital actions that it is a physiological commonplace, is so little understood in reference to the mental class of vital actions that it may appear a psychological paradox, and a paradox which no explanation can make acceptable so long as the Mind is thought to be an entity inhabiting the organism, using it as an instrument; and so long as Society is thought to be an artificial product of man's mind,—in which case it cannot be one of the conditions of mental evolution.

5. Leaving the justification of our definition to subsequent pages, we are enabled by it to specify the class of phenomena which form the object of our study. Instead of defining it as "The science of the facts of Consciousness," which is at once ambiguous and restricted, we propose, as more precise and comprehensive, "The science of the facts of Sentience." These terms have the advantage of at once ranging the search under the general science of Life, and also of rescuing many phenomena from the ambiguity arising when these are unconscious.* There are

* Sir W. HAMILTON, treating of certain mental modifications, says—"They are not in themselves revealed to consciousness; but as certain facts of consciousness necessarily suppose them to exist, and to exert an

many writers who not only limit the science to the facts of Consciousness (which forces them to extreme vacillation in the use of this term), but also regard Consciousness as absolutely *sui generis*, unallied with all other facts, even the organic, so that the science calls for an unique position, and a Method that is unique. In this work the science will be regarded as a branch of Biology, and its Method as that which is pursued in the physical sciences. The broad distinction of objective and subjective aspects I fully admit, but deny that this calls for any change in Method. I admit the speciality of what are called spiritual facts; I admit that because of this speciality they can never be explained by, or reduced to material facts, whether we assume their difference to be that of *agents* or only of *aspects;* I further admit that no deductions from what is known objectively of the material mechanism will explain the phenomena of sensibility, as states of consciousness, any more than anatomical knowledge of an organ alone will enable us to deduce its function. But for all this I must reject the separation of Psychology from Biology so long as I am unable to separate Mind from Life.

The relation of Mind to Life is so plain that no one has ever doubted it, yet so obscure that no one has been able to present a precise statement of their points of identity and difference. We may define, we cannot explain it. We can define it by analytically distinguishing certain functions as sentient from other functions as nutrient; but in reality no such

influence in the mental processes, we are thus constrained to admit as modifications of mind what are not in themselves phenomena of consciousness."—*Lectures on Metaphysics*, 1859, i. 348.

separation is feasible. If we classify certain phenomena as psychical, and others as vital, the artifice is patent, since all psychical phenomena are vital, and in all of them sensibility is a factor. This identity admitted, there is still need to specify the difference which leads us to mark off Psychology as a branch of the general science of life. That science—Biology—includes plants, animals, and man, with the respective subdivisions, Phytology, Zoology, and Anthropology. Each of these is again subdivided into Morphology, the science of form, and Physiology, the science of function. Now clearly it is neither with the structure of the organism, nor with its phases of evolution, that Psychology is concerned, but solely with the sentient functions and faculties of the organism. And as on a first glance this would seem to be the peculiar province of Physiology, the science of function,—the question may arise, Why not be content with it, why admit a separate science? There are writers who explicitly maintain that Psychology is only another name for the Physiology of the sentient organism; but to be consistent in this they have to extend the conception of Physiology far beyond its scientific acceptation.

THE RELATION OF PSYCHOLOGY TO PHYSIOLOGY.

6. This is a point of considerable importance, and one on which there seems great vacillation of opinion, not only among the various schools, but in the writings of each author. I will endeavour to fix with precision the conception which will guide my own exposition.

We see men and animals performing certain actions in consequence of certain external influences; and other actions, the causation of which is hidden from us, and assigned to internal influences. The resemblance of both classes of actions to those performed by ourselves, irresistibly leads us to infer that in them, as in us, the actions were stimulated and guided by feelings. Sometimes we think only of the movements which we see, and sometimes only of the feelings which we infer. Accordingly, we may say that we saw a man snatch up a stick and strike a dog; or that we knew the man was angry and resolved to punish the dog. This twofold interpretation of the same event we name its objective and subjective aspect. A similar twofold aspect is presented in reflection on our own actions. We say that we are both Body and Mind. We know that we exist as *objects*, perceptible to our senses, and to the senses of others; and as *subjects*, percipient of objects, and conscious of feelings. We live, feed, and move. We feel, think, and will. The solidity, form, colour, weight, and motions of the Body constitute the objective, visible self (*ὁρατόν*). The sensations, ideas, and volitions constitute the subjective, intelligible self (*ἀειδές*). Thus opposed, there is the broadest of all possible distinctions between Body and Mind. It was appreciated by the earliest inquirers, who, naturally enough, concluded that the inner self was the ruler, if not the fashioner of the outer (*τὸ τοῦ σώματος ἄρχων*); a conception which still lingers in the fallacy of organs being created by functions. Although modern science tends rather towards the opposite extreme, in its pursuit of the

bodily conditions of mental functions, the broad contrast between the objective and subjective aspects remains unassailed. To many thinkers, indeed, the contrast seems far more than that of aspects, it is that of agents. They postulate a vital principle and a psychical principle—a Body, the organism, as the *substance*, or agent, of all the vital actions, and a Soul, the *subject*, or agent, of all the mental phenomena. The difference in the physical and mental aspect is interpreted as implying a difference in the Vital Principle which stands for the one, and the Psychical Principle which stands for the other. Yet that these are merely two generalised expressions of the observed phenomena, and that the different actions are those of one and the same agent, are the only conclusions which Experience warrants. They are indeed conclusions which a philosophy claiming another basis than experience rejects. What we know is that the living organism has among its manifestations the class called sentient; and these are known as *sensible affections, i.e.*, the changes excited by the contact of external causes, and assignable to visible organs of Sense; and *states of consciousness, i.e.*, the changes of Feeling, excited by internal causes, and not assignable to visible organs. It is *not* known, nor is there any evidence to suggest, that one of these classes is due to the activity of the organism, the other to the activity of another agent. The only agent known is the organism. That an organism can feel and think is doubtless mysterious. The fact that it does so is all we are concerned with, and is neither more nor less mysterious than the fact that the organism can live and move.

7. Keeping within the lines of Experience, we may be said to know the nature of the Soul, as we know the nature of the Body. We know the separate manifestations; and we know the logical artifices which condense the manifold phenomena in abstract terms. Sir W. Hamilton taught that "in so far as mind is the common name for the states of knowing, willing, feeling, &c., of which we are conscious, it is only a name for a certain series of connected phenomena or qualities, and consequently expresses only what is known." Surely that is enough? Not for the metaphysician; for he adds: "but in so far as it denotes that subject or substance in which the phenomena of knowing, willing, feeling, &c., inhere —*something behind or under the phenomena*— it expresses what in itself, or in its absolute existence, is unknown" (*Lectures*, i. 138).

If that something is unknown, on what grounds can we pretend to say what it is or is not? We cannot lawfully say that it is not some mode of existence of the organism. Waiving this, let us ask what definite and verifiable conception is expressed by "a something behind the phenomena"? It may mean either the conditions of which the phenomena are the functions, or *pre*-conditions which were indispensable to the existence of those conditions then and there. Both of these are amenable to empirical methods. Anything more than these is a metempirical figment, an unknown quantity to which no function is assignable, and which consequently can have no place in a scientific theory dealing only with known functions.

Dismissing then the metempirical postulate of a

"something behind or under the phenomena," which is neither their conditions nor their pre-conditions, we have the two abstractions *substance* and *subject* as the "something" in which the observed phenomena are said to "inhere." If the reader will strike out the terms mind, feeling, knowing, and willing, from Hamilton's passage, and replace them by motion as the common name for changes of position in space, or by vitality as the common name for the changes in an organism, he will see that the substance or subject in which qualities inhere is only the abstract expression for the sums of such qualities. Mind as a *subject* is the logical conception of the qualities grouped in a class; if we translate it into a physiological conception, and seek the agent of which all the phenomena are the actions, we get the organism. We no more come upon the evidence for a Psychical Principle which is not the abstract expression of this organism, than we come upon a Motor Principle behind the conditions of movement, or a Vital Principle under the conditions of organic change.

8. Thus, and thus only, is it permissible in a scientific treatise to speak of Soul or Mind, as substance or subject. Our search for the conditions and pre-conditions of the phenomena is therefore solely directed to the organism in relation to the external world and to the social world. Thus defined, the place of Physiology is that of the organic *conditions of production;* the place of Psychology being that of the *products.* Physiology deals directly and chiefly with the objective aspect of sentient facts, and their relation to the visible organism; Psychology with the same facts in their subjective aspect as states of

Feeling, not as organic changes. The physiologist traces the sequence of stimulation through sensory nerve, centre, motor nerve, and muscle. It is with the mechanism that he is directly concerned, although from first to last he has indirectly been occupied with the changes in Feeling. Were it not for this implied identity of molecular and sentient changes, the sequences would have no more significance for him than similar sequences in a machine. The psychologist has the same events before him, but regards them from a different standpoint. He is concerned directly with *feelings as such*, and their relations to other feelings—with the products, not with the conditions of production. He must, indeed, imply the co-existence of organic changes, because the feelings are those of a living organism; but so long as the nature and succession of the phenomena in their subjective aspect attract him, he need only tacitly imply the co-existence of the objective. His concern is with changes in feeling, with processes which are conscious processes, or which *have been* and *may again* be conscious.

This latter clause is of immense importance, and points to the indispensable union of the physiological with the psychological investigation For observe: we can classify subjective facts while remaining ignorant of their objective correlates; as ordinary men classify the cardinal facts of life while wholly ignorant of Anatomy and Physiology. But if we desire to know the subjective facts with accuracy and fulness, it is obvious that we must learn their objective conditions of production. A chemist studies both the nature of the elementary substances

and the laws of their combination; having these products before him, he analyses them in the search for their conditions of production. Only thus can he satisfy himself that he knows the products accurately. But in seeking these conditions he is forced to pass beyond the sphere of Chemistry proper: he has to invoke the aid of Physics. The physiologist also has to pass beyond the observation of functions, and invoke the aid of Anatomy, Chemistry, and Physics. In like manner, although the exclusive province of the psychologist is that of the sentient changes as products, the aid of Physiology is needed to supply the conditions of production; it alone can disclose the operation of changes which escape subjective appreciation.

To the physiologist there must appear a grave misconception in the common declaration that "all we know of a sensation is our consciousness of it." This is a truism if sensation and consciousness are equivalent terms, but such equivalence can only refer to the subjective aspect of the phenomenon. Objectively, as a vital fact, we know a sensation as a force in the organism, a condition of movement, a component in some conscious resultant, which, whether itself consciously discriminated, or merely merged in a conscious resultant, has the same vital, the same psychical operation. And this force, this sensible component, which lies outside the range of introspection, may be proved experimentally to be in actual operation; and may even be experimentally brought within the range of introspection. Thus, much that is inexplicable when the study is limited to the facts of consciousness on the method of Intro-

spection, becomes explicable when extended to the facts of Sentience on the wider method.

9. The contrast between the two studies is this: the aspect which the physiologist brings prominently forward is left in the background by the psychologist; and *vice versâ*. For example: I have certain musical sensations which I recognise as representing three bars of the Ninth Symphony. If, as a physiologist, I attempt an analysis of these sensations, I seek all the successive objective conditions—aerial pulses of certain amplitudes and rapidities, neural changes in the auditory tract, and excitations of the Sensorium: the result of all these being the musical sensations. But if, as a psychologist, I attempt the analysis, it is not to these objective conditions that they are referred. These are presupposed; and instead of aerial pulses and neural changes, I call up the experiences which have assigned every note to its position in the scale, and to every grouping of the notes its position in my mental history. I *re*-cognise the notes and their intervals. I also *re*-cognise the arrangement as that of Beethoven's Ninth Symphony. The effect of these sounds is far from being the simple response of my auditory tract; it is blended with nascent feelings, dim associations, and distinct images. The musical value of each note, and the musical feeling of each group, the recognition, and the revivals, have indeed their particular organic conditions; but these are too obscure for our observation, and were they transparent they would not be regarded in a psychological exposition.

There is a physiology of the sentient organism, and this is the theory of the sentient functions as the direct activity of the organs. There is a psychology

of the sentient being, and this is the theory of the Soul, its functions and acquired faculties, considered less in reference to the organism than in reference to Experience and Conduct. The physiologist presupposes that the psychical facts are known, his task being to detect the physical factors. The psychologist presupposes the physical factors, his task being to exhibit the mutual relations of the psychical facts. A theory of the organism and a theory of the soul equally demand a combination of the objective and subjective data.

Kant (*Anthropologie*, W. x. 115), with many other writers, regards all physiological explanation of psychical facts as idle speculation, "because we know nothing of the brain-fibres and their action." If Physiology were limited to brain-fibres and their action, the objection would be valid, for our ignorance is undeniable. But Kant admits that unconscious sensations and obscure perceptions form the larger proportion of our mental states; and as Sense, on its receptive side at least, is unquestionably an organic function, the exclusion of Physiology is manifestly impossible. He thinks that Physiology, though incapable of telling us what the action of brain-fibres is, can tell us "what helps or obstructs them;" and he assigns it therefore the position of a pragmatical Anthropology. One cannot say that in this, or in psychological investigation, Kant's success was such as to render his exclusion of Physiology wisely imitable.

10. Sensations and ideas spring up in the mind as flowers spring up in the fields. We see them only when they have emerged. We watch their changes

and disappearance. Science is prompted to seek out the conditions of their appearance, their changes and their disappearance. The search is for the most part groping in darkness. We know that a seed placed in suitable soil will throw out root and stem. We can trace its development as it draws certain materials from the soil and the atmosphere. But we know that the seed itself is a product, and has its own special determinism. The forms which the seed assumes are partly peculiar to it and partly common to myriads of others; nay, some of its forms are common to all plants whatever. Different seeds and different soils yield different plants, but all have the same fundamental substance and the same constituent forms. A speculative botanist extracting these common forms may present them as *à priori* conditions and call them Nature's innate ideas; following thus in the track of speculative psychologists. The psychologist admits that all knowledge arises *in* experience, though not all *out* of it. The botanist admits that all plants arise in earth or air, but not all out of them. There are conditions and pre-conditions of experience, as there are conditions and pre-conditions of plant life. The first question to be solved is, What is the nature of these? Is there an archetypal plant existing somewhere and somehow behind the phenomenal plants, a Soul or Spiritual Principle independent of the living organism? or is there an evolved product—seed—organism, which in a given medium will continue its evolution into other products? It is not less certain that before the eye can enter on its function of seeing under the required conditions, there are required pre-conditions of an

optical mechanism and a sensorial mechanism, than that before the seed can enter on its development there must be added to the conditions of soil, atmosphere, and temperature, the pre-conditions of ancestral adaptations which have formed protoplasm into seed.

BODY AND MIND.

11. The fact of unconscious intellectual processes, no less than of unconscious sensual and volitional processes, carries two important consequences. First, it disproves the notion that Psychology can be limited to the facts of Consciousness; for this would exclude the greater part of our mental life, and would imply that a judgment or a train of reasoning was not a psychological fact when it passed unconsciously. Secondly, it proves that Psychology, the science of the products, cannot be divorced from Physiology, the science of the conditions of production, without excluding all the processes known to be physiological and known to be unconscious. The two studies represent the two aspects of the relation between Body and Mind, aspects which are expressed in objective and subjective terms. Only when sentient activities have become so developed that a conscious Ego or Personality has emerged from them, which establishes distinctions between one class of feelings and another, can this famous contrast of object and subject arise. We learn to distinguish the different parts of our organism and their different activities; generalising and abstracting, we get the conception of Body representing one group, and of Mind representing another.

Once formed, these abstractions are personified, considered apart, and speculation is then busy trying to discover the *link* which unites them. For centuries men have puzzled themselves with this question. If we consider the genesis of the Mind as revealed to observation and induction, we see that at first there could be no such contrast of objective and subjective; and even now there are numberless indications of a mental activity only recognisable as a neural process, not at all as a conscious process.

12. Much of the obscurity arises from not distinguishing between Sentience, the activity of the neuro-muscular system, and Consciousness (in the special sense of Reflection), the particular Mode of Sentience. Thus, we are commonly said to be sensibly affected by an impression, but not to have a sensation unless we are conscious of this affection: a simple activity of the sentient mechanism does not suffice; there must be a special *addition* to it from some *other* mechanism—a reverberation from some other source. In this view, Sensibility is not the vital property of tissue, Sentience is not the function of the neuro-muscular system, but is the activity of the Ego, according to the spiritualists; the function of the brain, according to the physiologists.

In future pages I shall explain how both physiologically and psychologically it is *we* who feel, and not any particular organ; but that this *we* means the total sensibilities of the whole organism. Meanwhile I may remark, that we can only introduce the orderliness of science into this question by regarding every sensorial affection as sentient, therefore psychical; and every such affection as capable of rising into

conscious affection when the conditions of *relative* distinctness are present. The great mistake is transforming the antithesis of conscious and unconscious into the equivalent of mental and physical. How this arose, we know. Observation having detected the mechanical conditions of numerous vital actions, some of these sentient, Descartes argued that animals, at least, were mere machines. All their actions, and many of our own, were, he said, determined by purely mechanical motors. In man there was a soul which presided over the machinery, but in the animal there was the machinery without the soul.* I tried in my previous volume to show that this paradox, which startled Europe and has been recently revived, is true or false according to our interpretation of its terms. It is true if it be understood to say that animal actions, viewed solely in the light of movements, must be rigorously dependent on mechanical conditions; for Mechanics is the science of Movement. It is false if it be understood to say that the animal actions are exclusively phenomena of Movement, either as an abstract aspect, or as identical with the action of machinery; for these actions are chemical and vital, no less than mechanical, and their motors involve the co-operation of conditions never found in machinery.

* "Descartes a donné une définition métaphysique de l'âme et une définition physique de la vie. L'âme est le principe supérieur qui se manifeste par la pensée, la vie n'est qu'un effet supérieur des lois de la mécanique. Le corps humain est une machine faite pour elle même; l'âme s'y ajoute pour contempler en simple spectatrice ce qui se passe dans le corps, mais elle n'intervient en rien dans le fonctionnement vital." — CLAUDE BERNARD, *La Science Expérimentale*, 1878, p. 151.

13. The paradox of Descartes was useful in fixing attention on the operation of mechanical conditions, which had been too little regarded; but while it thus gave definiteness to research, and enabled men to understand spinal reflexes, it was injurious in its tendency to substitute the principles of inorganic machinery for the principles of organic mechanism. Hence, when a large class of actions were found to be effected in the absence of the brain, and were assigned to the reflex mechanism of the spinal cord, it was rashly concluded that such actions were due to purely mechanical motors. Sentience was excluded, because *that* was assigned to the brain exclusively. The next step was to conclude that since these spinal reflexes were often performed unconsciously, even when the brain was present, they proved Consciousness not to be indispensable; and Consciousness and Sentience being taken as equivalent, the final conclusion was that the real motors of such actions were mechanical. The spinal cord became the recognised apparatus for the transmission of movement and the production of muscular action, but not an apparatus for the production of sentience. Because it was demonstrably the one, it was denied to be the other. That it might be both was not considered. It acquired the title of excito-motor apparatus; the brain being the sensori-motor apparatus. But I have seen no rational grounds for the conclusion that one part of the central nervous system is both a mechanical and a sentient apparatus, while other parts similar in structure are only mechanical. The doubt on this head became a certainty when observation proved that not only had the cerebrum a reflex activity of the same kind as the spinal

cord, but that the cerebral reflexes were, like the spinal, sometimes conscious, sometimes unconscious states. Here it became clear that the antithesis between these two sentient states could not be the equivalent of the antithesis between sentient and mechanical, in the sense of mental and physical; both states were mental in one aspect and physical in another; the conscious state was proved to be *also* mechanical, the unconscious state was proved to be (in some cases avowedly) mental. We had no grounds for degrading any action of a sentient mechanism from the psychical to the physical sphere, solely because it *might* pass unconsciously, and often did so; nor could we refuse to admit the mechanical aspect of a mental state when that state was a conscious state. Objectively the vital organism is an apparatus for the transmission of motions, molecular and molar. In this view all its actions are mechanical. It is also an apparatus for the composition and decomposition of substances. In this view it ceases to be purely mechanical, and belongs to Chemistry. It is further an apparatus for morphological evolution and dynamic consensus—the special phenomena classed as vital. Thus, even on the objective side, the organism is more than an automaton; it is a chemical laboratory and a vital system. On the subjective side the neuro-muscular system gives place to the soul; its actions are feelings. Here there can be no question either of Mechanics or of Chemistry. The phenomena are no longer movements and decompositions. They imply such, and are referred to such, when their objective expressions are employed; as, on the other hand, all objective facts are finally expressible in terms of Feeling—such

terms as movement and decomposition being symbols of our sensible affections.

14. While, therefore, we emphasise the antithesis of objective and subjective aspects, we must insist on the *organic state*, and its corresponding *mental state*, as the antithetic terms for one and the same fact. Their separation into two different facts, and the consequent search for the *link* connecting them, we must dismiss as illusory. It is sustained by the popular, but erroneous, view of the relation between cause and effect, which assumes that one process or event (named cause) calls into existence another process or event (effect). This leads to the metaphysical puzzle of how one process can create another? According to the view expounded in *Problems of Life and Mind* (vol. ii. Prob. v.), an effect is the *causatum*, the incorporation of the causes or co-operant conditions, not a new and distinct event. That is to say, all the co-operant conditions which may severally be detected are *the cause* when viewed apart from their combination; these same conditions are *the effect* when viewed as a resultant. In consequence of this abstract mode of considering them, any one condition is often selected as the cause, and any one detail in the result as the effect. But in reality there is nothing in the effect which is not one of the conditions of its production; there is no new creation either of matter or motion, only new combinations of matter and redirections of motion.

If this be so, the relation between cause and effect is simply the relation between two modes of viewing a certain event; and this also is the relation between organic state and mental state, when organic state is

regarded as the cause, and mental state as the effect. The one does not really precede and call into existence the other; but the one is the objective expression, the other the subjective expression of the same fact. The organic state is the condition viewed objectively, not the pre-condition.

15. After this statement of the relation of Body and Mind, I will add that Psychology is somewhat less, and somewhat more, than the subjective theory of the organism. It is less, because restricted to the sentient phenomena, whereas Physiology embraces all vital phenomena. It is more, because it includes the relations of the organism to the Social Medium, whereas Physiology is concerned only with the relations to the Cosmos; and the many and profound modifications which arise from Experience and History, educating the sentient organism to react in new ways, are not accessible to physiological investigation. In treating of the human soul, we have largely to admit the influences called *spiritual*. The reader understands that by this term I mean to express the results of Experience, which have, indeed, corresponding modifications in the material mechanism, but these correspondences are so vaguely assignable that we do well to leave them unnoticed. For example, we are reading a somewhat illegible letter; physiological processes are of course in operation throughout, but no physiologist would attempt to explain how it is that we combine the hints of the several signs, and divine the meaning of each word by its context. The psychologist explains it by reference to the spiritual store of acquired experiences; the signs vaguely and successively *suggest* words,—*i.e.*, render nascent for-

mer experiences; but as one word after another is suggested, the Mind perceives it to be incongruous with the context, and rejects it, seeking another, till finally one is suggested which, seeming congruous, is adopted. Now, physiologically, *i.e.*, considered as a neural process, one word fits as well into the context as another; or, to speak more accurately, there is no such physiological process as would determine the selection *until* the context of Experience has modified the organism, and it is this which the term "spiritual" indicates. There is here some influence in operation which would very imperfectly be indicated by the term material; it is a psychological rather than a physiological interpretation; and although the term spiritual was first used when men conceived the soul to be a *spirit*, it may be still employed now we have transformed that hypothesis. When some mental anomaly cannot be assigned to a definite lesion of the nervous system (*neurosis*), pathologists call it a *psychosis*, as if it were a lesion of the unknown psyche. In the same way the normal phenomena which we cannot assign to definite physiological process are called, by way of distinction, psychological. This only means that our knowledge of the fact is not completed by knowledge of the factor.

No physiological explanation of mental phenomena can dispense with a constant reference to spiritual conditions: present stimulations have to be completed by past experiences. In the case of human beings, the experiences are complicated by the operation of social influences: it is through these that the highest powers are evolved. The conspicuous mental differences between a Goethe and a Carib cannot be

assigned to differences in their organisms and functions, but solely to their developed faculties. The organism of a Goethe in the social medium of the Carib would constitute a very superior Carib, but not a wide-sweeping intelligence with a sympathetic conscience.

FUNCTION AND FACULTY.

16. This leads me to suggest a more marked distinction between the terms function and faculty than is usual. By faculty is commonly understood the power or aptitude of an agent to perform a certain action or class of actions. It is thus synonymous with function, which means the activity of an organ, the uses of the instrument. I propose to detach faculty from this general signification, limiting it to the action or class of actions into which a function may be diversified by the education of experience. That is to say, let function stand for the *native* endowment of the organ, and faculty for its *acquired* variation of activity. The hand is an organ with the function of Prehension. To grasp, pull, scratch, &c., are its inherited powers. But the various modes of manipulation — cutting, sewing, drawing, writing, fencing, &c.—are faculties acquired by intelligent direction and the combination of other organs. Instincts are functions. Emotions are functions. Sensation and perception are functions. Logical combinations are functions. Some functions are simple, others compound; that is to say, some are performed by single organs, as vision by the eye; others by groups of organs, as Instincts and Emotions. The co-operation is fixed and invariable. It is otherwise

with the co-operation of organs in *faculties*, and it is because of this that the products are both optional and variously modifiable. The function of Prehension becomes the varied faculties of Manipulation by a variable co-operation of organs; the faculties of drawing, of writing, of musical performance, &c., demand the union of other and variable elements. As in the scale of the animal development we find an increasing complexity of organs compounded of simple tissues, and of apparatus compounded of organs, so we find faculties which are compounds of simple functions, and faculties again compounded of these. We say of a man that he has "remarkable faculty" when he is ready to adapt himself dexterously to a great variety of conditions, and to acquire skill in new operations.

This distinction of the activities which are fixed and functional, from those which are optional and modifiable, not only directs attention to the educable activities, but also points to the intervention of social influences. Thus, confining ourselves, by way of illustration, to the functions and faculties of the hand, we see the irrationality of the old notion which attributed man's superiority to his possession of this organ. The ape has hands very like man's, and these hands have the same functions; but the ape's faculties are not a fiftieth part of those performed by the hand of man. The ape is dexterous, and learns to apply his hands in various ways; he might be taught to cut and sew, as he has been taught to break an egg and fire a pistol. But no teaching could make him write, draw, play the piano, &c. Before writing would be possible, he would have to acquire the faculty of

Language, and if this acquisition were possible to him—which it is not—he would need the further faculty of translating sounds into symbols.*

Every function has its definite organ or group of organs. It is their constant *energy*. Every faculty has also its definite group of organs, but it is their temporary *synergy*. Hence the irrationality of the attempts to localise the various faculties in circumscribed regions of the cerebral convolutions. The faculty of Language, for example, has recently been localised in the third convolution of the left hemisphere, in entire disregard of the complex of functions which Language implies, and of the fact that Aphasia may be due to a defect of Phonation, of Ideation, or of Memory of sounds.

MECHANISM AND EXPERIENCE.

17. It has already been intimated that Physiology concerns itself directly with the sentient Mechanism, tracing its operation in the production of those facts

* In answer to the notion put forward by Helvetius that man's intellectual superiority over the horse was due to the fact of his having flexible fingers in lieu of an inflexible hoof, BONNET well remarks that Helvetius "n'avait pas considéré qu'un animal quelconque est un système particulier dont toutes les parties sont en rapport ou harmoniques entre elles. Le cerveau du cheval répond à sa botte, comme le cheval lui-même répond à la place qu'il tient dans le système organique ; si la botte venait à se convertir en doigts flexibles il n'en demeurerait pas moins incapable de généraliser les sensations ; c'est que la botte subsisterait dans le cerveau ; et si l'on voulait que le cerveau du cheval subît un changement proportionnel à celui de ses pieds je dirais que ce ne serait plus un cheval, mais un autre quadrupède, auquel il faudrait imposer un nouveau nom."—*Palingénésie Philosophique*, quoted by GALL.

of Sentience which it is the special province of Psychology to investigate as facts of Experience. Let us see how these terms express related and contrasted phenomena.

Mechanism sometimes means the complex whole of interdependent parts which constitute the organism, and sometimes the particular group of interdependent agencies constituting a special function. In the latter sense we speak of the respiratory - mechanism, the locomotive - mechanism, the reflex - mechanism, &c. Psychologists also sometimes speak of the mechanism of thought or of volition; they have here the interdependence of certain psychical states in view, with or without explicit reference to the corresponding physical states. Both uses of the term are justifiable, since what on the objective side is material combination is on the subjective side spiritual combination; mechanical and logical are here only two contrasted aspects of one and the same fact. If we observe a man withdraw his arm when pinched, all that we observe is the mechanical sequence of objective motions; and could we see the molecular changes in his nerves, centres, and muscles, we should still see nothing but sequent motions. The man himself (or we ideally picturing his internal changes) feels the pinch, and wills the movement of his arm; the sequence of sentient states involves the psychical mechanism.

Understanding, then, that in these pages the term mechanism will be used indifferently for the objective or the subjective aspect of the organic conditions of production, so far as these are known or definitely imagined as *fixities* of structure and function, let us

now pass to the correlative Experience, which will often be employed in contrast.

18. A preliminary caution may not be needless. The reader is familiar with the tendency to personify every abstraction, erecting it into what Spinoza calls a *res completa*. Owing to this, we are apt first to divest an object or event of all the special conditions which determine it and constitute its reality, and then to endow this abstraction with a new reality, assigning to it qualities not given in the original *res*. Hence the popular separation of Sentience from the sentient Mechanism, the Subject from the Object, the *sentiens* from the *sensum*, and the erection of each separated term into a *res completa*. Logically and analytically the distinction is useful. But its danger lies in this, that Sentience is easily conceived acting on and directing its Mechanism, as we direct our instruments. And it is worthy of remark, that many writers who energetically discard the fallacy in some forms retain it in others. They speak of the mechanism, which is admitted to be normally set going by the stimulus of a sensation or an idea, as capable of also acting without such stimulation—by insentient reflex—and also capable, when once set going, of keeping up its action without sentient stimulation. This, which has its plausibility in the confusion of the whole complex of conditions with one antecedent —whereby a single incidental force is made to stand for a whole group of forces—would never have gained acceptance but for the theoretic separation of Sentience from the sentient Mechanism, and the consequent assimilation of the organism to a machin

19. Having this caution before us, and remembering that *all* psychological processes are objectively organic processes, we shall understand that the mechanism of these processes may be expressed in objective or subjective terms at will, sensorial changes being equivalent to sentient changes. We now inquire what is meant by distinguishing between Experience and the Mechanism, so as to speak without ambiguity of Experience *directing* the Mechanism. The implication is that the one is to some extent independent of the other, and that the latter alone is dependent on structure. Neither of these implications is correct, but they roughly represent an important distinction, namely, between a variable progressive factor and an unvarying factor. The Mechanism means the visible (or intelligible) fixed structure with its corresponding fixity of *functions*. Experience means the modifications and fluctuating dispositions of structure, with the corresponding variability and progressive development of *faculties*. To a great extent the Mechanism is connate, Experience is acquired. The individual organism, though modifiable, is not seen to acquire new organs, only new aptitudes. Hence the constancy of type, the fixity of functions. So long as the organs are subjected to uniformities of stimulation, their action is of course unvarying. Thus the nutritive and reproductive organs present the constancy of machinery; once matured, their structure never sensibly alters. It is otherwise with some fluctuating combinations of the Sensorium. Subjected to varying stimulations, and combinations of stimulation, it acquires new aptitudes, new modes of response; and is incessantly

modified, if not in its elementary structure, at any rate in the fluctuating disposition of its elements. It thus forms, as it were, a spiritual mechanism superadded to the material mechanism. This is Experience on the subjective side, and is equivalent, on the objective side, to a new central organ. Our principles imply that it also represents a physiological modification and a corresponding organic modification; but the precise nature of the organic modification is so entirely hidden from our present means of detection that we shall do well to abstain from all attempts to specify the objective fact, content with our clear apprehension of the subjective fact. Thus, for example, while Physiology is utterly powerless to specify structural and functional differences between the savage and the civilised man of the same race, Psychology easily specifies wherein the spiritual organisation of the two is markedly different. There must, indeed, be corresponding differences in their organisms; the *residua* of past feelings which constitute the Experience of both are organic modifications; but what these are we cannot guess. No anatomist could pretend to discern the difference between the hand which executes a great variety of delicate manipulations, and the hand which has acquired none of these aptitudes; but every one can recognise the fact of the superiority, and can trace it to education. No anatomist could trace the modification which has taken place in the brain of a child who, having been painfully affected, remembers the pain when the object which excited it is seen again. We know that the child acts differently in consequence of this experience; but that is all we know. If we see

a moth returning to the flame after it has been burnt, or the fish returning to the bait after it has been torn by the hook, we conclude that no such modification has taken place, no registration of Experience determines a control of the primary impulses.

These two illustrations show how the organism reacts on stimulation according to its connate constitution, and also according to its acquired constitution,—by the Mechanism which it brings with it as a heritage, and the Experience which has modified that heritage. We have sensations and emotions because the sentient mechanism is set in action; when these leave behind them traces in our constitution, so that on any fresh excitation the past feelings are revivable, we have experiences. If an object comes within the range of Sense, we feel it, *i.e.*, we react on the stimulation in virtue of our native and acquired mechanism. The lower animals probably never get beyond this stage; but the plasticity of the Sensorium in the higher animals permits its permanent modification, so that impressions are grouped, and these groups are revivable by any one of the impressions, and by internal excitation:—they feel again what they formerly felt, and their perceptions of objects are surrounded by an atmosphere of quite remote feelings. This is Experience—the psychological mechanism.*

21. The foregoing considerations have made evident that Physiology and Psychology are two modes of apprehending the phenomena of the sentient organism, two distinct studies (what the Germans call Disciplines), which, nevertheless, mutually imply each

* For further elucidation of fixity and variableness in the organic responses see *The Physical Basis of Mind*, p. 326 et seqq.

other. The physiologist has sentient facts to explain, and is guided by them in his interpretations of the organic processes. The psychologist, in like manner, has always to presuppose the operation of organic processes, since these are the conditions of production of the facts he is classifying. Both studies are very immature, and this immaturity is in no slight measure owing to their separation; one consequence of the separation being that the physiologist accepts at second-hand the imperfect theories of some psychological school, and the psychologist accepts at second-hand the imperfect physiological theories of the day. There can be no satisfactory theory of the functions and faculties until a truer classification and theory of the psychical phenomena has been established; nor can there be a satisfactory theory of Mind until there has been a more rigorous reduction of mental processes to biological and sociological conditions.

This position may be illustrated by Mental Pathology, which has run a course parallel to that of Mental Physiology. Hippocrates, a great observer, whose vision was little blurred by mists of metaphysics, saw in mental maladies abnormal brain-action; and his immediate successors sought in abnormal conditions of the organism for the direct causation of all the forms of insanity. But during the reign of theologians and metaphysicians this scientific standpoint was deserted, and mental maladies passed from the hands of physicians into the hands of priests: exorcism and prayers took the place of hygiene and prescriptions. The theologian regarded insanity as demoniacal possession. The metaphysician regarded it as

a spiritual perversion, and sometimes as a want of harmony between the soul and its "instrument." Neither doubted that the soul was one thing and the body another, and that the two were in all respects absolutely dissimilar. Even so late as the present century we have had the two antagonistic schools of spiritualists and organicists, the one referring insanity to disease of the soul, the other to disease of the body. In Germany, Heinroth, long regarded as the supreme authority, starting from the dogma that the body was only the basis, but Reason (*Vernunft*) the principle of human life, declared that all mental abnormities were due to the irregularities of Reason, the instigations of Passion. Insanity thus became the symptom of Vice. "Innocence is never insane, only guilt." The practical absurdity of this theory has long been recognised. No one now argues with a demented patient. No one thinks of curing mania with sermons. The existence of a cerebral disease, which demands the physician's care, is now the universal belief. Mental maladies have taken their place beside bodily maladies, and have become a subject of natural science, to be studied on the same method as all other sciences. The observation of *symptoms* directs the search into *causes*. The abnormal function is referred to some abnormal state of the organism. "The theory of mental maladies," says the latest writer on this subject, "embraces the modifications of the normal mental activity by organic diseases." *

The parallel runs further. Just as the reaction of the organicists against the spiritualists has led to an

* Schüle: *Handbuch der Geisteskrankheiten*, 1878.

exclusive attention being fixed on one part of the organism in neglect of the other parts, and the brain made to do duty for the whole of the sentient mechanism—an exclusiveness which has further led to the assignment of psychical functions to certain nerve cells—so the alienists have followed this lead, and, in spite of daily experience contradicting the theory, have declared insanity to be brain disease and nothing else. Even Schüle cannot rid himself of this preconception, though both in his introduction and in the body of his work he gives ample evidence that its exclusiveness is unwarrantable. One point which he brings forward may be noticed here, because it falls in so well with the views I advocate. "Mental maladies" (he says, p. 3) "are cerebral diseases, but they are more than this." The *more* consists in conceiving the patient, not simply as one suffering from cerebral disease, but as a spiritual being, the product of former generations, so that his ancestors must be taken into account among the conditions of his psychical symptoms. This recognition of the individual as a product of his race, and consequently of the individual abnormities as determined by ancestral abnormities, is a true biological standpoint; and only needs to be completed by the sociological standpoint which regards the individual mind as determined by the General Mind (see § 118).

If the changed point of view which has caused mental maladies to be studied as symptoms of organic maladies is approved by the success of modern medical treatment; if—and no competent person can have the slightest doubt on this point—our understanding of mental maladies is only to be

effected by this union of physiological interpretation with clinical observation, it is obvious that a similar Method is the only one on which we can hope to reach an explanation of the normal mental actions.

22. The task of the future is plain: Physiology must trace for us the organic conditions of the observed phenomena, explaining the sentient functions by the sentient mechanism. It must study man first as an animal. Psychology, receiving from the hands of Physiology a theory of the mechanism, must from Observation and History trace the operation of this mechanism in the functions and faculties which spring into existence through its adaptation to the Cosmos and Society. It must study man as a social animal. History discloses the stages of development, from the simple emotions and conceptions of rude barbaric social states to the ever-increasing complexities of civilised states. It shows how an organism, not appreciably changed as to its external structure and essential mechanism, acquires in its psychical functions a predominance of the human over the animal characteristics, as sentiments are evolved from emotions, impersonal impulses from personal impulses, science from experience. The animal basis is never forsaken; the social superstructure is never wholly deficient. From the first hour of his existence man is a social unit: he lives in society, is mentally developed by it and for it.

CHAPTER II.

THE MOTIVE.

23. This is a twofold craving, such as determines every other study, a craving both speculative and practical. As a speculative craving it is theological and scientific. An undercurrent of theological impulses may be discerned directing the inquiries even when the avowed aim is not that of establishing or undermining theological conceptions; and Mr. Collier, in a valuable essay on the "Development of Psychology,* regards this theological impulse as one of the two factors which have in all times operated in the construction of the science.

24. The speculative motive is that of ascertaining the relation of the sentient organism to the cosmical and social conditions in which and through which it exists. The practical motive adds the further aim of modifying our impulses and adjusting our actions to these external conditions, or modifying these conditions and adjusting them to our needs. The true purpose of Knowledge is the regulation of our Conduct. The end and aim of Life is Welfare—in its most abstract expression. Every organism shrinks from what is disturbing and disagreeable, and clings

* *Westminster Review*, No. cc.

to what is in harmony with it. Action is a necessity; all that is in our power is the direction of activity, and this is momently guided by neural excitations, and by sensations which are pleasurable or painful. Taught by these, the individual learns to direct his activities. Enlarging experience develops a forecasting tendency, germinal in animals and savages, conspicuous in the civilised man. Looking beyond the immediate conditions and feelings, this tendency prefigures images of possible future conditions and feelings, whereby the present action is restrained and adapted to the anticipated circumstances. With such speculative vision come vague and agitating images of Invisible Powers supposed to originate all visible changes. These grasp the soul, and force it henceforward to attend to them as the chief of all external conditions. To them it is felt that action must be adjusted. If they can be discovered, they may be modified by prayer, sacrifices, or other means of intercession, as chiefs and potentates are propitiated. To be agreeable to them by flatteries, self-sacrifice, or the sacrifice of others, will, it is hoped, soften their severities, secure their favours. In this abject state the majority of mankind still cowers.

25. But there are dawn-streaks of a brighter day. Mental development has, in a small minority which daily enlarges its circle, transformed these Invisible Powers into visible Properties and intelligible Relations. Fear is replaced by the desire to know. Experiment displaces intercession; for reliance on prayer is substituted obedience to ascertained laws. The hope of modifying the Invisible by ceremonies

and sacrifices gives way to the hope of adapting the properties of things to our needs; and where this is impracticable the conviction teaches resignation and the effort to adapt our impulses to agencies that are inexorable. The scientific attitude is, therefore, one of earnest endeavour combined with patient submission. It no more hopes to modify the order of Nature by litanies and ceremonies, by flatteries and self-reproaches, than it imitates those savages who imagine they can lure the fish into their net by shouting its praises across the river and vociferously proclaiming the fish to be a mighty chief.

26. Man soon found that knowledge of the properties of things was not the only important object of search. He also found that his own personal welfare was not the only aim to which his activities should be directed. Man is by his constitution forced to live for others and in others. The welfare of his family, his tribe, his nation, and at last the welfare of Humanity at large, is felt or discerned to be interwoven with his own welfare. His life is part of a social life, aided and thwarted by the needs and deeds of fellow-men, which thus become external conditions of his existence, on a par with cosmical conditions, and must be studied with equal solicitude. Society is far more modifiable than Nature; and its Ruling Powers, namely, Passions, Sentiments, and Ideas, may be modified both by direct appeals and by indirect action on their generating causes. Much of this modification takes place spontaneously by the interaction of human impulses and the necessary subjection to external fact. The conscious efforts to the same end are embodied chiefly in two great

Arts—the art of Education, which applies itself to the individual, and the art of Government, which applies itself to society.

27. We are thus conducted to the practical motive, the importance of psychological science in the establishment of true principles of Education and Government. As society develops, it shapes itself into fixed Institutions of Religion, Law, Morality, Science, and Art—the organs of Humanity with their social functions. Each justifies itself, and requires no other reason for its continuance than that it ministers to individual needs and subserves a social end. When instituted, Science has a social function, and pushes its objects for its own sake, with only a remote reference to any other end; although, being a social function, it must have social utility. In many of its researches it may not bear on its face any other usefulness than that of furthering the welfare of the Intellect; but that usefulness is great, not indeed for an individual considered apart from society, but for society, of which Intellect is the servant.

28. The growth of Intellect out of Intelligence, that is to say, the systematisation of experiences under methodised symbols, we shall hereafter trace as a purely social product. All cognition is primarily emotion. We only *see* what *interests* us. No phenomenon is interesting until it is illuminated by emotion, and we see, or foresee, its connection with our feelings. Even so conspicuous an event as a crash of thunder is to the child and the dog an unobserved event, because they have not learned to associate with it any change in their own lives; whereas to the developed Intellect the remote events

of prèhistoric ages or the possible constitution of the stellar universe are of thrilling interest, being included in the wide sweep of contemplative emotion, or satisfying a theoretic activity which has taken on the intensity of a mental hunger. The impersonal and indirect interest replaces the personal and direct interest of the uncultivated mind. Facts which can only have a very distant bearing on the lives of men, and no conceivable influence on the present needs, apart from the need of gratifying the Intellect, are investigated with passionate patience.

29. Thus the desire to understand the operations of the Mind has the same source as the desire to understand the operations of Nature, whether these are or are not recognised as having an immediate practical bearing. The intellect, having reduced external phenomena to some system of ideal constructions, endeavours to do the same for internal phenomena. Cosmology terminates in Biology, and Biology in turn terminates in Sociology. Philosophy has thus all the materials for a conception of the World, Man, and Society.

30. But, as was intimated just now, speculative interest, although a sufficing, is not the only motive: practical issues are at once desired and discerned. The art of Education is to Psychology what Hygiene and Medicine are to Physiology. Educators indeed have rarely recognised this relation, but have pursued their plans in an empirical and traditional independence, very similar to that which has directed the teachers of Medicine, and from the same cause, namely, the great imperfection of the sciences of Psychology and Physiology. Hence teachers may

dispute the subordination of their respective arts to the sciences. But the indisputable fact that Education and Medicine have hitherto followed their own empirical methods without much regard to the sciences, arises partly from the difference between practice and theory, art and science; and partly from the urgency of practical application, which cannot await the final results of research, and their systematisation in abstract principles. The child has to be taught and the patient treated according to the means at hand; tutor and physician must be guided by such light as he has; he cannot wait until science has disentangled from the mass of mingled prejudice, precipitation, ignorance, and knowledge the true laws of mental and bodily life. All this is true. Nevertheless, it is likewise true that both tutor and physician have been guided by the psychological and physiological conceptions current in their time, although supplementing these with empirical observations and traditional prejudices, and following the latter even when they were irreconcilable with the ascertained laws of science. The absurd notions respecting the nature of the mind, its simplicity, autonomy, independence of the organism, and its equality in all men, are clearly recognisable in the current practices of educators; just as, formerly, absurd notions respecting a vital principle, and the nature of the entity named Disease, directed medical practice.

Once recognise that Education is an art which has its scientific basis in Psychology, and the importance of having a rational and verifiable basis, rather than one that is unverifiable, becomes obvious. In proportion, therefore, as Psychology acquires scientific

precision its influence on Education will become beneficent, and thus also an improved Physiology will lead to a better art of Medicine, without, in either case, removing the difficulties belonging to each practical application of abstract principles. A knowledge of the way in which faculties are evolved, impressions organised, moral and scientific intuitions formed, habits established, and the structure no less than the furniture of the mind receives its individual character from the silent and incessant modifications of Experience, will make parents and teachers keenly alive to the incalculable importance of the conditions under which the early years of the child are passed. Whoever has closely studied the evolution of the faculties will see the folly and the wickedness of leaving children to the care of ignorant servants and vulgar companions at a period when impressions are most indelible,—a period when, as we know, the germs of the future character are deposited. If out of the same nursery, the same schoolroom, and what seems the same environment, children of the same parents are so markedly unlike in disposition, talents, tempers, it has to be considered that the original differences in their organisms give rise, even under the same circumstances, to a difference in an important element—the individual experiences. To gain some glimpse of the way in which intuitions are established and dispositions formed is the first task of parent and teacher.

31. Although Government, as an art, belongs more to Sociology than to Psychology, it will necessarily derive great aid from the latter. For one thing, it must take into account what have been the influences

under which the actual character of the nation has been constituted, and what are the relations of that character to theoretic reforms. Is this a truism? Then why has it been so persistently disregarded by social theorists and reformers? The idea of reconstructing society otherwise than by a slow process of moral and intellectual education, fitting the members for the new institutions, is not less preposterous than the idea of reconstructing a diseased organism otherwise than by the slow processes of regimen and physiological recuperation. A practical renovation of society must be founded on the existing interests and tendencies of its classes; an abstract theory of possible future society is a prophetic vision in which existing facts are disregarded or transformed. But for both the practical and theoretic purposes a knowledge of actual and possible human motives is required, and a knowledge of psychological laws is as necessary here as the knowledge of physical laws in any practical or theoretic efforts to modify the external world.

32. Having thus stated what it is we study, and why we study it, the final question how we ought to study it remains, and this, being the most important of the three questions, must have fuller treatment. As a preliminary we must settle the position which the science occupies in the series of sciences.

CHAPTER III.

THE POSITION OF THE SCIENCE.

33. UNTIL quite recently, universal opinion assigned Psychology to the special group of Moral Sciences which were held to be diametrically opposed to the Physical Sciences, both in the matters treated of and in the Methods of Inquiry. The sciences of Human Nature were supposed to have so little in common with the sciences of Nature that their logic and means of verification were different. Men believed in the co-existence of two independent orders of events, having their common ground in a world beyond, namely, the Suprasensible,—which as dogma was claimed by Theology, and as science by Metaphysic. God, Man, and Nature thus constituted three objects of knowledge, accessible through three different avenues.

Physics, the study of Nature, slowly emancipated itself from Theology and Metaphysics, and was suffered to pursue its own Method. The Moral Sciences continued to form a class apart, even when they had so far emancipated themselves as to disengage their special object, the facts and laws of Human Nature. This was followed by a recognition that Man, being a part of Nature, ought to be studied on the Method

which alone had proved successful in the study of Nature. But even this recognition was restricted to the bodily functions of man; the old bias still asserted itself with regard to the mental functions. Without boldly affirming that, as a thinking being, Man was not a part of Nature, philosophers insisted that Thought had nothing in common with Nature; differing *sui generis*, it could not be amenable to the same canons. The scholastic dogma that Mind was exclusively appropriated by the theologian, while the Body, with all its sensible affections, was handed over to the student of Nature,* although not explicitly avowed, was implicitly accepted.

A change has been effected. Among advanced thinkers it is now unhesitatingly admitted that Mind is a form or function of Life; consequently that the Method pursued in the investigation of vital phenomena is the only one rationally to be pursued in mental phenomena. There are differences in the appliances, and in the respective proportions of observation, experiment, and subjective interpretation; but for all sciences there is one common Logic, one common Method, and it is on this ground that the growth of physical science has fed and stimulated the growth of psychological science. The importance of this admission is capital.

In an essay, already mentioned, on the development of the science in England, Mr. Collier has well pointed out how the progress of Psychology has been aided in all its stages by advances in the physical sciences.†

* AQUINAS: *Summa Theologiæ*, i. qu. lxxv.

† *Westminster Review*, No. cc. No notice is taken in this essay of Cabanis, Gall, Helmholtz, and Wundt, whose labours would have supplied good illustrations.

34. Science is the systematisation of our experiences; it is Common Sense methodised and generalised. All that we have felt, or may feel, it ranges under two aspects: the subjective and personal, the objective and impersonal. Every event, every feeling, has this twofold aspect, is indissolubly objective and subjective, according to the mode of its apprehension. I have a sensation. This is known to be a state of my bodily organism, when viewed objectively; a state of my mental activity, when viewed subjectively. I may so far detach the feeling from my own personality as to project it outside of me, and regard it as an object, a cause. I then say this sensation *is* a flame, a colour, a form. But I may also detach the feeling from its objective aspect, and regard it solely as a change in my consciousness. By this artifice of abstraction the indissoluble reality of a twofold aspect is overlooked, and each being separately named, comes to be regarded as an independent existence. We then cease to think of *objects* as *feelings*. Reflection may convince us that objects are groups of feelings, all their qualities being known to us only through our sensible appreciations, or our symbolical conceptions of such; but whenever we see or think of objects and qualities, irresistibly we project them outside our sphere of feeling, and believe them to be impersonal existences, and their qualities due to their nature, not at all to ours. So also when we feel a sensation, or think of one, we isolate it from its objective aspect, its real cause, and believe it to be simply a movement of our spiritual nature.

OBJECTIVE AND SUBJECTIVE LAWS.

35. These abstractions are not only irresistible, they are eminently serviceable. Founding on them, we divide Science into laws of the Object and laws of the Subject; or, in other words, laws of Nature and laws of Human Nature. The first embraces Cosmology and Biology. Facts are observed, classified, ranged in order of sequence and subordination. They are explained when they are reduced to their factors, their conditions of existence. They are summed up in abstract formulæ, the so-called laws of Nature; which, we must remember, are neither sensible existences, nor descriptions of such, but *ideal constructions*, representing the constant elements of the variable combinations.

The second group embraces the laws of Human Nature as laws of the Subject. Beginning with Psychology and ending with Sociology, these presuppose the objective laws, as the laws of Nature presuppose the subjective laws. Biology is intermediate between Cosmology and Sociology: on its objective side it is a physical science, on its subjective side a moral science.

36. These two contrasted groups are often thought to be separated by an unbridgeable gulf, which no dexterity of speculation can pass. Viewing the phenomena of Nature and Human Nature objectively, we can, indeed, range them in an ascending series from minerals to man, and from individual man to society. All the modes of existence may thus be graduated according to a scale of complexity. But no sooner are these same phenomena viewed subjectively

—that is to say, no longer as *modes* or existences, but as *subiects* or existents,—than a sudden break seems to occur at that point in the scale where Forces appear as Feelings. I mean, that between the observed actions which embody forces, and the actions which embody feelings, there is no objective difference; they are both expressible in terms of Matter and Motion. But interpreted subjectively, there is a profound difference, resting on the presence in the one of a factor—Sensibility—which has no place in the other; so that although there is an intelligible expression of Matter and Motion in terms of Feeling, there is no such intelligible expression of Feeling in terms of Matter and Motion.

37. Admitting this, and emphasising the distinction between objective facts and subjective facts, we nevertheless recognise that the observation, classification, and explanation of both orders must proceed on the same method. The laws of Human Nature are discoverable in the same way as the laws of Nature. Physicists have reduced all objective phenomena to laws of Motion and one general conception of Force, measuring all diversities by one standard. They postulate one Force having many Modes, and one Law of Conservation embracing all these Modes. We cannot know whether this conception accurately expresses the reality of Nature; enough that it expresses the objective relations for us, and in a way which admits of *calculation*. The unity assigned to the physical forces is quantitative only—a standard of measurement applied to the phenomena objectively—not a qualitative expression of their nature as both objective and subjective. By a corresponding artifice all

the subjective aspects of phenomena may be reduced to Feeling; and if we can establish general laws of Feeling, they will pair off with the objective laws of Force.

38. Such metaphysical considerations need not here be developed. Our point is that the Logic of Science remains unaltered whether the events be expressed in objective or in subjective terms. A sensation or a thought is alternately viewed as a physical change or as a mental change. It is usually classed among subjective facts, but this does not discharge it from the objective world; it only specifies the aspect in which we contemplate it. Consider this contrast: the law of gravitation and the law of diffusion are undeniably laws of the object, and are sharply contrasted with the law of association, which is not less undeniably a law of the subject. Every one will declare the first to be laws of Matter, and the second a law of Mind. Why? Because in the one case our interest is so directed to the objective relations that the subjective aspect is left out of account, and the laws are presented as if independent of the mind which conceives them—a view manifestly erroneous; and in the other case it is the subjective aspect which interests us; we think only of the associated feelings, and not of the external facts they embody, not of the neural processes which are their physical correlates.

Parenthetically we may note a double fallacy arising from this isolation of one aspect from the other. First, there is the conviction that the phenomena, which are demonstrably the part products of our Sensibility, do nevertheless exist with all their sensible qualities where no Sensibility is present to

co-operate with them. This fallacy has long been recognised by philosophers, who have not, however, always recognised the second fallacy, namely, that ideas can associate, and one mental state produce another, in the *absence* of organic states, solely by virtue of subjective activity. This is equivalent to supposing one motion to produce another by purely dynamic influence, in the absence of moving bodies and the conditions of movement. Yet this fallacy we shall find even Stuart Mill falling into (§ 42).

To return to the law of gravitation. Obviously it might be regarded as a subjective law, and that of association as an objective law, if our point of view changed. The facts observed and classified are necessarily perceptions in the observer, and the law which formulates these observations is indubitably an ideal construction which has no objective reality. Both laws—that of gravitation and that of association—are symbolical conceptions, and what they symbolise are states of Feeling. If we think of them in this light, they are both psychological facts. If we think of them objectively, the one is a mathematical the other a physiological fact.

39. So much on the general question. Biology presents it in a peculiar light, for here for the first time the twofold aspect of phenomena becomes conspicuous, our interest in the subjective side—that of Feeling—being as great as our interest in the objective side—that of Force. It takes its undeniable place among the objective sciences, for although vital phenomena are special, they are specialisations of the general properties of Matter, and are expressible in terms of Force. It also takes its place among the

subjective sciences, since its phenomena include those of Mind. In its evolution it passes from Vegetality to Animality, and through Animality to Humanity. With Animality a new factor, Sensibility, becomes conspicuous. With Humanity another factor emerges —Sociality. Although the facts of animal and human life, so far as they are objectively regarded, are expressible in terms of Force, they are usually expressed in terms of Feeling; and hence the long debates respecting the true position of Psychology among the sciences: some writers consider it a branch of Biology, others detach it, and assign it a place by itself.

My own opinions on this question have so often fluctuated that I cannot be insensible to the difficulties it presents. I shall best make the reader acquainted with my final decision by examining the arguments of three thinkers with whose general principles I am most in agreement.

THE VIEWS OF COMTE, MILL, AND SPENCER.

40. Because Auguste Comte contemptuously, and, as I think, erroneously, rejected the Introspective Method, and because he denied a place among the fundamental sciences to a Psychology pursued on that method, he has frequently, and with manifest injustice, been accused of denying that there could be any science of the moral and intellectual functions. Assuredly he never thought of denying nor of underrating psychological facts, and the laws of such facts; what he asserted was that such facts were wholly biological facts, and were to be investigated as such.

No one has made this charge against Kant; yet he also denied that Psychology could be an independent science. He referred its facts to a Transcendental Logic, as Comte referred them to Biology; when he quitted this transcendental region, it was to refer the facts to Anthropology.

I agree with those who consider Comte wrong in his rejection of Introspection; and his error becomes more conspicuous in his exposition of a cerebral theory (*Politique Positive*, i. 675, et seqq.) founded avowedly on subjective analysis, which is carried so far that even the position of the imaginary "organs" is not determined objectively. Apart from this, however, I think him justified in proclaiming that a theory of the moral and intellectual functions can only belong to a theory of the organism; therefore that Psychology is a branch of Biology.

41. Stuart Mill erred on the opposite side. Laying the chief emphasis on the subjective aspect, and consequently on the Introspective Method, he was thereby led to separate Psychology from Biology, not as species from genus, but as two radically different kinds. The existence of uniformities of succession among states of mind, which could be ascertained by observation and experiment, proved that a separate science of such states was possible; and he maintained that the only mode of studying these must be Introspection, because, although sensations have nervous states for their immediate antecedents, and it is probable that all mental states have nervous states preceding them, yet we are so imperfectly acquainted with the characteristics of these nervous states that "mental phenomena do not admit of being deduced

from the physiological laws of our nervous organisation" (*Logic*, 6th ed., ii. 432).

Had Mill been better acquainted with Physiology, he would have known that many mental phenomena have been deduced from, and many more illuminated by, the laws of our nervous organisation; and this, indeed, must necessarily be the case if organic state and mental state are but different aspects of one and the same process. But Mill had no clear conception of this. On the contrary, he adopted, and insisted on, the common mistake of regarding the neural process as the *antecedent* and originator of the mental process. I have already characterised this as equivalent to regarding the convex of a curve as the antecedent to its concave. To disengage it from an ambiguity, we may note that there *are* neural processes which may be thus regarded; for example, the process of retinal stimulation, which is the first stage of a complex process, the final stage of which is a visual sensation, may be said to be the antecedent of the visual sensation, and it may be called into existence *without* being completed by the final stage of sensorial reaction called vision. But it is not this, nor such as this, which is meant when a neural process or organic state is called the physical correlate of a mental state: not this isolated stage, but the completed synthesis is the *cause*, or group of conditions, of the mental product. Any antecedent which is merely a pre-condition, or an isolated condition, can only *represent* the cause by an ellipsis.

42. But the point of view here indicated Mill had apparently never taken. "All states of mind," he says, "are immediately caused either by other states

of mind or by states of body." This distinction implies that he imagined some mental states to exist which were not at the same time states of body. Of what then were they states? He did not believe in the existence of a spirit animating the body; yet such a belief would have given consistency to his views. To regard Mind as a function of the organism, and yet suppose that some mental functions had no organic conditions, was a strange incongruity. States of mind are always caused by states of mind, and these are states of body when viewed objectively. He says, "When a state of mind is produced by a state of mind, I call the law concerned in the case to be a law of mind." Good: when the subjective aspect of the process is considered, the law is psychological. But he adds, "When a state of mind is produced directly by a state of body, the law is a law of body, and belongs to physical science;" and here there is a confusion. The production is always directly a state of body; but is a physiological law, when viewed as a change in the organism, a psychological law when viewed as a change in feeling? The point of view is different in the two cases, the event is the same. Take, for example, a melancholy mood: it is a mental state, and its law psychological, when considered subjectively, and its cause referred to disappointed affection or a fall in the Funds; the conditions here are all psychological experiences in which not a thought is given to the organic conditions. But this same mood is also a state of the organism, and considered objectively it is a change in the secretions, and an alteration of nervous level; the sequences are

in this case as exclusively physiological as in the other they are psychological.

43. Thrown off the track by his misleading conception, Mill, while declaring that all sensations manifestly belong to the body, thought it an open question whether other mental states were thus dependent on neural states. Without positively affirming it, he said it was rational to assume that ideas—unlike sensations—"might be recalled in virtue of mental laws which are independent of material conditions." I regret that my attention had not been directed to this passage during the years when it was my happiness to be in friendly intimacy with this distinguished philosopher, so that, by questioning, I might have ascertained all he really meant by a statement which seems so very questionable. The only interpretation by which it may be plausibly supported seems this: we know that a perception gained originally through sensible affections may be reproduced in the fainter form of an image when none of the sense-organs are directly stimulated; this reproduction is thus apparently independent of the neural processes which produced it originally, and, being thus regarded irrespective of such processes, is held to be a psychological, not a physiological fact. But observe: both the original production and the subsequent reproduction are activities of the organism, and imply organic states, known or unknown. These states are not precisely the same in the two cases, neither are the mental facts—sensation and image—precisely the same. We cannot fairly call the one state bodily and the other mental, simply on the

ground that in the one case we can assign certain definite conditions of stimulation of the sense-organs, whereas in the other case we can only vaguely assign certain changes in the Sensorium. The fact that we can have coloured sensations internally excited years after the eyes which originally excited the sensations are destroyed, is evidence, indeed, that the Sensorium, and not the eyes, is the seat of the sensations, but is no evidence that the sensations are bodily states in one case and mental states in the other.

In a word, to speak of "mental laws independent of material conditions" is legitimate on the part of a spiritualist, but is hopeless confusion on the part of any one who believes Mind to be a function of the organism. It is true that the mental laws are often known where the material conditions are unsuspected, or are but hypothetically assigned; and the scientific principle that we are to explain the facts by reference to known and not to unknown conditions determines our frequent disregard of the physiological for the psychological point of view. Another reason for this procedure is that Physiology being occupied with the Mechanism and its functions mainly in relation to external Nature, and Psychology mainly with Experience and the faculties, which admit of more intelligible expression in subjective terms, "the material conditions" are so constantly left out of sight, because always presupposed, that "mental laws" seem to acquire an independence.

44. In Mr. Spencer's exposition we have quite other arguments to meet. He has so luminously expounded how Mind is evolved as one of the forms of Life, that we might expect him to be, above all men, ready to

admit that, in so far as mental functions are functions of the nervous system, Psychology must be correlated with the Physiology of that system, and in so far as Mind is a function of the living organism, the science of Mind must be a branch of the general science of Life. Yet we find him admitting this only in a qualified way. He detaches the functions of the nervous system under the title of Æstho-Physiology, as forming only the preparatory conditions of Psychology, not properly belonging to it. "So long as we state facts of which all the terms lie within the organism, our facts are morphological or physiological, and in no degree psychological." This is in accord with what we have previously laid down. Our difference begins at the next step, where he concludes that a change in the point of view alters the character of the events, and that psychological facts cease to be facts of the organism when they are viewed subjectively. His definition of psychological is not the subjective aspect of a process which objectively is physiological, but "the relation between a neural process and a feeling when regarded in connection with some existence lying outside the organism."*

So great a thinker has clearly a right to introduce a new definition, and carry out his exposition accordingly. But readers who remain unconvinced may be allowed to state why they cannot accept his defi-

* SPENCER: *Psychology*, i. 131, 132. It may interest the reader familiar with Mr. SPENCER'S work to note the coincidence between his definition and that given by CARUS in his *Vergleichende Psychologie*, 1866; because, while it is quite certain that Mr. Spencer's work appeared first, there is no trace of Carus having seen it. He defines the soul: "Eine in derselben als Empfindendes und Gegenwirkendes, bald leidend, bald thätig sich beweisende *Beziehung* auf ein Aeusseres zum Zweck ihrer eigenen innern Ausbildung und Entwicklung."

nition. I am unable to see the propriety of separating (otherwise than as an analytical artifice) the facts of Feeling from their organic conditions; unable to see why Psychology should be restricted to those facts of Feeling which are *explicitly* recognised as in relation to external objects. He has previously admitted that neural process and sentient process are two aspects of the same fact, but when he argues that it is impossible to understand how the two are related, this alleged impossibility is made to rest on the conception of a phenomenon being something apart from its conditions, instead of its being (as I formerly tried to prove) simply the synthesis or function of the conditions. If we once admit that a change in Feeling follows on and flows out of its organic process, as one event follows another, and an explosion succeeds the spark, then indeed the mystery of Feeling as related to organic process presses on us with unique impenetrability: such a transubstantiation is inconceivable. But the alternation of objective and subjective aspect, if it does not dissipate the mystery, at least resolves it into the general background of darkness which for our vision surrounds all ultimate facts.

45. The reader may have noticed that in the foregoing paragraph the terms organic and neural are used interchangeably. The reason of this will appear in a subsequent place, where an explanation will be given of how the nervous system, or the neuromuscular system, comes, in the short-hand of exposition, to be the representative of the sentient mechanism. If we take the term "neural process" to stand simply for the molecular change in nerve and centre,

and not as representing a change in the whole sentient organism, then indeed a neural process is the antecedent to a feeling, the spark which precedes the explosion; and in this sense it is absurd to regard neural and mental as convex and concave.*

46. There is another light also in which Mr. Spencer's definition seems to me unacceptable. When he says that every psychological proposition is necessarily compounded of two propositions, of which one concerns the object, and the other the subject, we may reasonably answer that *every* proposition whatever implies both. He has foreseen the objection which must spontaneously present itself to all readers who have followed his exposition of Life as the "continuous adjustment of inner relations to outer relations," and who will therefore ask, wherein is the difference in this respect between biological and psychological phenomena? His reply, that in Biology the external phenomena are only tacitly or occasionally recognised, in Psychology they are at every step avowedly and distinctly recognised, is hardly an accurate statement. True, that in Biology the attention is very often directed mainly to the organism, with only a tacit implication of its relations to the medium. But this is equally true in Psychology, the attention being often occupied with the changes

* This felicitous image of the convex and concave, first employed by FECHNER for the objective and the subjective aspects, may have been suggested by a passage in ARISTOTLE which one very near and dear to me has brought under my notice:—*Λέγεται δὲ περὶ αὐτῆς (ψυχῆς) . . . τὸ μὲν ἄλογον αὐτῆς εἶναι, τὸ δὲ λόγον ἔχον. ταῦτα δὲ πότερον διώρισται καθάπερ τὰ τοῦ σώματος μόρια καὶ πᾶν τὸ μεριστόν, ἢ τῷ λόγῳ δύο ἐστὶν ἀχώριστα πεφυκότα, καθάπερ ἐν τῇ περιφερείᾳ τὸ κυρτὸν καὶ τὸ κοῖλον, οὐθὲν διαφέρει πρὸς τὸ παρόν.* —*Nic. Eth.* I. xiii. 9.

in consciousness, and not with their objective correlates. His assertion that no psychological proposition is expressible without a distinct and avowed recognition of objective relations does not seem to me reconcilable with fact. Three examples may suffice:—1°, Feelings experienced simultaneously tend to revive each other; 2°, Perceptions are condensed into conceptions by generalising what the perceptions have in common; 3°, Memories are revivals of past experiences. Now, although it is true that in these, as indeed in *all* orders of propositions, there is an implication of external relations, can we say that it is more distinctly and avowedly recognised than food is recognised in a proposition respecting digestion, or the atmosphere in a proposition respecting respiration?

47. Mr. Spencer sustains his position partly by a novel limitation of the province of Psychology, and partly by an insistance on the total lack of community between the phenomena of Consciousness and the phenomena treated of in all other sciences. It is true that, while not adopting the broadly marked separation of objective and subjective aspect as what determines a corresponding separation between physiological and psychological questions, he is somewhat vacillating in his language, even to the length of defining the branch of the science which he calls Æstho-Physiology, and which is said to furnish the data of Psychology, as that which treats "of *nervous* phenomena as phenomena of *consciousness*." But letting this pass, all that he has expounded under the head of Æstho-Physiology may be taken as the physiology of the sentient organism, which, under its

subjective aspect, is the classification of the facts of Sentience; and if the facts of Consciousness are not to be included among the general laws of Feeling—an exclusion and limitation which I think render Psychology hopeless as a science—then, indeed, the physiology of the sentient organism will only be a preparation for Psychology, and the latter science may claim its place apart from Biology, no longer being a science of any functions of the organism.

48. Among the many ideas which have occurred to me in meditating on this question is the following: A science might be constituted out of the facts of Consciousness alone, wholly disregarding the objective aspect of such facts, and consequently their conditions of existence. It would be an abstract science of Feeling, to stand beside the abstract science of Force—an *Æsthesics* parallel with *Dynamics*. The general facts of Feeling formulated in abstract laws would then be disengaged from all concrete manifestations; the organism and the medium would be left out of account, as Matter and its Qualities are disregarded in Dynamics. Physicists having reduced Light, Heat, and Sound to vibrations, setting aside all the special differences in the conditions, physiologists have imitated them, and reduced all sensations and thoughts to cerebral vibrations—setting aside all the specific differences in the organic conditions. A psychological Lagrange might arise who would reduce all these vibrations to a single equation.* Were such

* "Lagrange dans un ouvrage immortel s'est attaché, en ramenant tout au calcul et s'élevant au dessus des détails et des faits, à *remplacer les phénomènes par des formules qui les enveloppent et les cachent.*"—BERTRAND. (In the Appendix to vol. ii. of *Problems of Life and Mind* I have treated of LAGRANGE'S work in relation to HEGEL.)

a science constructed it would assuredly be a powerful instrument; but it would not be a Psychology—it would be no theory of the soul—it would no more expound the facts of Human Nature than Dynamics expounds the facts of Nature. Therefore I had to return from this hypothetical excursion to the position that a theory of the soul was necessarily a part of the general theory of life; and Psychology, in spite of the dominantly subjective aspect of its phenomena, must, for all students who reject the idea of the soul as something independent of the organism, be a part of Biology. That sentient phenomena belong to the organism none dispute; the only dispute is whether psychical phenomena are special forms of Sentience. Mr. Spencer agrees with biologists in regarding the phenomena of Consciousness as subjective aspects of certain organic phenomena—"such nervous changes as are brought to the general centre of nervous connections;" and since he would also admit that to withdraw sensations, emotions, and volitions from the group of animal functions would seriously truncate the science of Life, leaving it only Nutrition, Growth, and Reproduction for its province, there must be some very strong reasons which determine his rejection of the conclusion, seemingly irresistible, that Psychology must be a branch of Biology. What are these reasons?

49. One has already been debated. He separates Æstho-Physiology, the science of the sentient organism, on the one hand, from the science of the nervous system, and, on the other, from the science of Consciousness. "Æstho-Physiology," he says, "has a position that is entirely unique. It belongs neither

to the objective world nor to the subjective world; but, taking a term from each, occupies itself with the correlation of the two." In the course of his exposition he presents Psychology "as a specialised part of Biology," but separated from it as Geology from Astronomy, or Biology from Geology, by the conspicuous presence of additional factors, which, however, also make their appearance occasionally in Biology. Now, since I too admit additional factors, and one—the social—which he does not here enumerate, our difference so far is not conspicuous, nor is Mr. Spencer's ground for his isolation of Psychology very clearly marked. But it becomes evident in the following passage:—"A far more radical distinction remains to be drawn. While, under its objective aspect, Psychology is to be classed as one of the concrete sciences which successively decrease in scope as they increase in speciality, under its subjective aspect Psychology is a totally unique science, independent of and antithetically opposed to all other sciences whatever. The thoughts and feelings which constitute a consciousness are absolutely inaccessible to any but the possessor of that consciousness, form an existence that has no place among the existences with which the rest of the sciences deal" (p. 140).

50. The antithesis between objective and subjective may serve to distinguish Physiology from Psychology, but it does not mark out Psychology as totally opposed to all other sciences, for the simple reason that they likewise deal with phenomena having the twofold aspect. The motions of the heavenly bodies, the motions of minerals and gases, and the motions of organic bodies, are objective aspects of our sensible

affections; what we know of colours, forms, heat, weight, motion, &c., is due to the action of the Cosmos and reaction of our organism: we believe that there is a Notself acting on the Self; but all we know of this is what we feel. The feelings are distinguished and classified; some are referred to causes outside the organism, others to causes inside the organism. Thus each fact and each feeling has necessarily two aspects, one turned towards the Notself, the other towards the Self. The fact is not a fact except in so far as it is felt; the feeling has always a reference to its cause, external or internal. When, therefore, the question is asked, Why must a phenomenon have two aspects? the answer is, Because it is the product of two factors, an organism that feels, and an external that is felt.

The psychologist, indeed, has to explain how it is that one set of feelings rapidly assume the position of objective *signs*, becoming less and less referred to the feeler, more and more to the felt, as when the *flame* is referred to the objective fire, itself a synthesis of feelings, but the *pain* of a burn is referred to the organism, and not to the fire. The psychologist has to expound this by his theory of knowledge. In this respect his science is unique; for whereas the other sciences are concerned with the classification of knowledge, his science treats of how we come by knowledge; but since that also is a department of knowledge, it comes under the same canons of research as all the others. Moreover, Psychology is not limited to the theory of knowledge; it is the ascertainment and classification of the facts of Feeling, both in their subjective and objective relations, and in this way

also comes under the general conditions of science. Hence we cannot separate Psychology from the other sciences on the ground of its phenomena being feelings, nor on the ground of the feelings being limited to individual experience. All sciences deal with feelings. Psychology alone deals with them in their subjective aspect. It is not the presence of Consciousness that marks off the phenomena as those of an unique science, but the presence of a particular point of view, a theoretic attention to the feelings *as* feelings. The ordinary man feels as the psychologist feels; but he does not reflect on the peculiar nature of these feelings as changes in his organism, does not attempt to account for their production and successions. His consciousness no more suffices for a theory of Consciousness than the perception of geometric forms suffices for the construction of a science of Geometry. Science begins when the facts are classified and systematised. And the psychologist classifies and systematises the subjective aspects of Feeling, irrespective of their objective aspects, as the geometer isolates the relations of magnitude from all other sensible relations.

51. With regard to the second point, while it is true, in one sense, that the thoughts and feelings of others are inaccessible to us, in another sense it is inadmissible. Psychology is in a bad way, if the philosophers are to be trusted; one school declaring that each man can only *know* his own thoughts, and *infer* the existence of other men's from certain appearances; while another school declares that he cannot really know his own thoughts as they *are*, only as they *appear* (*Kant, Anthropologie*, § 7). Now, granting

all that is claimed when it is said that the feelings of others are inaccessible to us, this does not give Psychology an unique position, for it is equally true of the *vital* functions of others, and indeed of all that belongs to the not-ourselves; yet we know something of them, and Biology and Cosmology are sciences. And in another sense the feelings and thoughts of others must be accessible to us, otherwise there could be no science of Feeling, nor any communication from others to ourselves of what they feel and think. It is true that your subjective state can only be an objective fact to me, except in so far as I am able to interpret the objective fact in its subjective aspect. But this is true of all facts. I express my feelings and thoughts in actions, gestures, and words. I observe other beings closely resembling me in all objective relations; and observing these beings act, gesticulate, speak as I do, I conclude that they are moved by similar feelings. It is of such conclusions that knowledge is made. The distinction between Knowledge and Opinion is that, in the first case, the prevision is founded on inferences that have been verified. We know something of an object when we can, from past experience, *foresee* what its effects will be, and not simply what they *may be* under changed circumstances. The psychologist interprets certain visible facts as the signs of invisible feelings, just as he knows that sugar is sweet and that dogs bite. When a man is motionless and silent, we cannot certainly know what is passing within him—there are no visible signs to guide us. When an acid is quietly lying beside an alkali we cannot know what will be the effect of their combination unless past ex-

perience enables us to foresee it. The statement that "each individual is absolutely incapable of knowing any feelings but his own" is acceptable only on a very restricted definition of knowledge; and on this definition we must declare that man is incapable of knowing anything except his present feelings. Exclude Inference, and we do not know that sugar is sweet or that dogs bite; admit Inference, and we know that other men beside ourselves have feelings of the same nature as our own.

50. My object in this discussion has been to reinforce the position that Psychology is a branch of Biology, having for its special province the analysis and classification of the facts and laws of Sensibility viewed in their subjective aspect. It embraces Animal and Human Sensibility; but partly because of the supreme interest of the human phenomena, and partly because we can less easily understand the mental phenomena of animals, Psychology must—for the present at least—be restricted to those of human beings.

CHAPTER IV.

THE SOCIAL FACTOR.

51. THE first step towards the constitution of our science has been the specification of its object and scope, and the relation it bears to all other sciences. The next step must be to specify the Method and register the fundamental inductions.

Biology furnishes both method and data in the elucidation of the relations of the organism and the external medium; and so far as Animal Psychology is concerned this is enough. But Human Psychology has a wider reach, includes another important factor, the influence of the social medium. This is not simply an addition, like that of a new sense which is the source of new modes of Feeling; it is a factor which permeates the whole composition of the mind. All the problems become complicated by it. In relation to Nature, man is animal; in relation to Culture, he is social. As the ideal world rises above and transforms the sensible world, so Culture transforms Nature physically and morally, fashioning the forest and the swamp into garden and meadow-lands, the selfish savage into the sympathetic citizen. The organism adjusts itself to the external medium; it creates, and is in turn modified by, the social medium, for Society is the product of human feelings, and its

existence is *pari passu* developed with the feelings which in turn it modifies and enlarges at each stage. Obviously, then, our science must seek its data not only in Biology but in Sociology; not only in the animal functions of the organism, but in the faculties developed under social developments.

52. This conception is novel. Formerly there was but a vague appreciation of the relation between Psychology and Physiology; and even when the advance of knowledge forced the admission of *some* constant dependence of mental functions on bodily functions, there was for the most part little precision in the conception. Men knew that the mental functions were conjoined with the organic activities, and were in some way dependent on the external medium. They knew also that the social conditions had some influence; but this knowledge found only fitful application. Psychologists for the most part pursued speculative inquiries; they proceeded deductively from certain imaginary principles, and troubled themselves little with induction and verification. The abstract theory of Mind preceded all examination of mental phenomena. Doctrine took the place of Search. A similar procedure had been followed in the study of Life, and still earlier in the study of the Cosmos: unabashed by ignorance of Anatomy and Physiology, undeterred by the absence of any insight into physical laws, philosophers constructed theories of Life and the Cosmos, and soon presented these theories as dogmas. Slowly the change came. The futility of this philosophising is now a commonplace; and all thinkers call upon inductive research for the data which may be co-ordinated into doctrine.

The manifest superiority of the new procedure is its constant control of speculation by verification; hence its step-by-step progression, slower but more assured than that of the large and incoherent leaps of Metaphysic.

Psychology, if it is to take rank with the sciences, must pursue their course. It cannot be too alert against the tendency of accepting unverified inferences, whether introspective or physiological. But when thus alert, it may give free play to speculation. The idea of submitting speculative inferences to objective verification slowly gained ground, as the conviction grew that mental phenomena had a physiological basis. This conviction had a severe struggle to go through. The most accredited thinkers not only detached Man from Nature, but the Mind from the Organism; they invented a Psyche as the source of all mental phenomena, and endowed it with attributes which were in all respects the opposite of organic attributes. The metaphysical notions of immateriality, simplicity, spontaneity, &c., had a certain significance as abstract expressions of observed phenomena; unhappily they were accepted as realities, and were made the grounds of deduction, so that any observations which seemed irreconcilable with one of these abstractions were rejected or explained away.

53. Impatience at the futility of the speculative method led to the first attempts of inductive analysis. The facts revealed to Introspection were classified, and some approximative interpretations were reached. But still the fatal restriction of the science to the facts of Introspection kept men from the study of the organism. The organs of Sense were too conspicuously concerned in Sensation to be wholly ignored; but

while, on the one hand, the Physiology of the Senses was very little understood, on the other hand men were deterred from the search by alarm at Materialism. Nor was this alarm without its justification at that time. The spontaneity and subjectivity of moral and intellectual processes stood in marked contrast with the mechanical and physical terms in which the materialists expressed them. The revolt against Materialism was not entirely the revolt of Sentiment, though no doubt Sentiment has powerfully aided and sustained it, giving momentum to the intellectual discernment of a contradiction, so that what reason regarded as a defective conception, sentiment dreaded as a moral degradation. Who that had ever looked upon the pulpy mass of brain substance, and the nervous cords connecting it with the organs, could resist the shock of incredulity on hearing that all he knew of passion, intellect, and will was nothing more than molecular change in this pulpy mass? Who that had ever seen a nerve-cell could be patient on being told that Thought was a property of such cells, as Gravitation was a property of Matter?

54. Although it is tolerably certain that the materialists did not mean all that they were said to mean, and quite certain that they repudiated the consequences forced upon their premisses by adversaries, they did fall into the error which besets analysis—that of substituting a part for the whole—and did not discriminate the objective from the subjective aspects of the phenomena. But they, and we with them, rightfully insist on the fact that mental phenomena are functions of the organism; and we are no more called upon to explain *why* this is so than

why masses gravitate and plants germinate: our object is to discover the *how* and not the *why*. A vast mass of inductions led to the conclusion that psychical functions are not only functions of the living organism, but that in the mechanism of these functions the chief part is assigned to the neuro-muscular system. If this be granted, there is no more difficulty in understanding how the vital property of Sensibility should be chiefly manifested by the nervous tissue than in understanding how the vital property of Contractility should be chiefly manifested by the muscular tissue.

But this is only a step. Looking at the brain, and asking, How can this pulpy mass be credited with Thought? is looking at one part of a complex mechanism and wondering how it can be credited with mechanical products. You must know the whole mechanism before you can rightly interpret the action of a part. You must understand the living organism before you can interpret the function of the brain. And more: in looking at the brain you contemplate the mechanism on its objective side: it is a material mass, and its actions are molecular changes. If you ask, How can these material changes be feelings and thoughts? you are suddenly shifting from the objective to the subjective point of view. Dissect an eye with the utmost accuracy, and you will never divine in such dissection that it is capable of responding to the stimulus of light. Contemplate an ovum, and you will never divine that this microscopic cell is capable of developing into a complex and gigantic animal. Induction proves the eye to be the organ of sight and the ovum to be the starting-point of an organism. But we must know these facts before we can read

them in our observations of eye and ovum. What does this mean? It means that the data which have been studied apart must be reconstructed by a synthesis before we reach an explanation. Our knowledge respecting the sentient mechanism is still wretchedly imperfect, but, were it a hundredfold enlarged, it would still be objectively nothing more than watching a printing machine in operation, which would disclose how the sheets of paper were laid on the types and removed after the roller had passed over them, but would tell us nothing of how the types were set up, nor what was the significance of the printed words.

55. From these considerations it appears that while the subjective analysis of Introspection needs the control of objective analysis, and Feeling must always be regarded as a function of the Organism, there is also the necessity of completing objective observation by subjective introspection, interpreting the facts of the Organism in terms of Feeling. So long as mental processes were regarded as wholly distinct from organic processes, the application of Physiology to Psychology, or of psychological experiences to physiological problems, could only be illusory. Modern thought has revolutionised the question by its grasp of the principle that mental state and organic state are only two different aspects of one and the same thing—distinct from each other in so far as they are apprehended in different ways and expressed in different terms. Thus illuminated, the two sciences have a mutual instrumentality, and their respective series of phenomena serve, like two versions of the same original, to elucidate and amplify each other.

56. A twofold advance has been made. Biologists have ceased to isolate man from Nature, and they have been followed by psychologists who have ceased to isolate man from the animals. Observation has revealed more and more of the fundamental similarity in the structure and functions of man and animals. Introspection could never have revealed this. And now-a-days, instead of having to warn psychologists against neglecting the data which are furnished by observation of animals, there is need rather of a warning against exaggerating their value.

57. The first great step in the right direction was made by Cabanis when he endeavoured to point out the invariable connection of moral phenomena with organic conditions. Imperfect as the attempt was, it was a preparation for a more precise and comprehensive view of the relation between functions and organs —the basis of our science. Another great step was taken by Gall in his search for the particular organs by which particular functions were effected. His localisation of these organs in the cerebral convolutions was indeed defective in principle, since it ignored the organism as a whole, and assigned to one part of a complex arrangement the results due to many parts; moreover, his anatomical and physiological data were inaccurate. Nevertheless his hypothesis was truly scientific in character, and it gave an immense impulse to research. He taught men to keep steadily in view the constant relation between structure and function; he taught them the necessity of objective analysis; he taught them the futility of looking inwards, and neglecting the vast mass of external observation which animals and societies afforded; he taught them

where to seek the primary organic conditions—in inherited structures and inherited aptitudes.

The effect of this teaching is conspicuous in modern works, however little of his special system they may reproduce. Indeed, we may now say that the biological attitude has displaced the metaphysical: mental phenomena are everywhere regarded as vital, and not as having a source which is independent of the living organism.

58. But there is a final step to be taken for the constitution of the science. The biological conception is defective in so far as it treats only of the individual organism, and only of the organism in its relation to the external medium. For Animal Psychology this would suffice; for Human Psychology it is manifestly insufficient. Man is a social animal —the unit of a collective life—and to isolate him from Society is almost as great a limitation of the scope of Psychology, as to isolate him from Nature. To seek the whole data of our science in neural processes on the one hand, and revelations of Introspection on the other, is to leave inexplicable the many and profound differences which distinguish man from the animals; and these differences can be shown to depend on the operation of the Social Factor, which transforms perceptions into conceptions, and sensations into sentiments.

It is this final conception of the science which it will be my aim hereafter to expound. I have already intimated that others* before me had been impressed with the fact that social influences modified mental

* Notably Mr. SPENCER. See the luminous exposition: *Psychology*, ii. 521 *et seq.*

phenomena; indeed, the fact was too conspicuous to be overlooked; but I am not aware that any writer, not even Comte, who expressly recognises it as a psychological factor, had seen its vast reach or traced its *mode of operation.* The influence of the external medium was likewise too conspicuous in Physiology to have been at any time entirely overlooked; nevertheless a clear recognition of its mode of operation is quite modern. The patent fact that Psychology was by one school based on Introspection, by another on Cerebral Physiology, and by the others on a combination of these lines, proves how imperfectly the Sociological basis was appreciated.

59. Let us suppose our knowledge of the organism to be enormously extended, it would still be incompetent to furnish an explanation of moral sentiments and intellectual conceptions, simply because these are impersonal and social, arising out of social needs and social conditions, involving, indeed, the organism and its functions, but involving these in relation to experiences only possible to the collective life. The higher animals have structures closely resembling our own; they have sensations, emotions, perceptions, judgments, volitions, generically like, though specifically different from, our own; but their experiences are restricted to their personal needs, their emotions are never developed into impersonal sentiments, their logic knows nothing of abstractions and the construction of abstractions in Science. Sentiment and Science are beyond the range of Physiology, for they are not interpretable by the Mechanism; they are the evolutions of Experience, and are acquired slowly through the long periods of social evolution. Nay,

many sentiments and conceptions are not possible even to human beings until the social evolution has brought them in its train. So far from their being innate, they are utterly unknown to the vast majority of mankind.

60. Driven thus to seek beyond the organism and its inherited aptitudes for the origin of a large portion of our mental life, we can find it only in the constitution of the Social Organism of which we are the units. We there find the impersonal experiences of Tradition accumulating for each individual a fund of Knowledge, an instrument of Power which magnifies his existence. The experiences of many become the guide of each; they do not all perish with the individual; much survives, takes form in opinion, precept, and law, in prejudice and superstition. The feelings of each are blended into a general consciousness, which in turn reacts upon the individual consciousness. And this mighty impersonality is at once the product and the factor of social evolution. It rests on the evolution of Language, as a means of symbolical expression rising out of the animal function of individual expression by the stimulus of collective needs. Without Language, no Society having intellectual and moral life; without Society, no need of Language. Without Language, no Tradition; without Tradition no elaboration of the common arts and skill which cherish and extend the simplest products of the community; and without Tradition, no Religion, no Science, no Art.

61. It is therefore to History and the observation of man in social relations that we must look for data which may supplement those of Introspection and

Physiology. The conditions of existence of mental phenomena are not only biological but also sociological studies. A serious investigation of these will serve to remove most if not all of the difficulties which make men cling to the spiritualist hypothesis, because they are profoundly impressed with the inadequacy of the materialist hypothesis. There will, of course, always remain mysteries enough, on any explanation of the phenomena, but these will not interfere with the scientific orderliness of verifiable conceptions, and Psychology will take its rank among the positive sciences, pursued on the same Method as all the rest.

CHAPTER V.

SUBJECTIVE ANALYSIS AND THE INTROSPECTIVE METHOD.

62. HAVING stated the problem, we have now to inquire how its solution is to be pursued. The reader will already have gathered that I range myself neither on the side of those who proclaim Introspection the only valid source of psychological knowledge, nor of those who contemptuously dismiss it, and rely solely on Observation of external appearances. The "deliverances of Consciousness" cannot furnish the solution of a problem which we have seen to be highly complex, involving both biological and sociological data. But while limiting the claims of Introspection, we need not deny their validity.

Introspection is Observation, differing only in that the phenomena observed are subjective states or feelings, and not objective states or changes in the Felt. We observe changes of Feeling, no less than changes in the External; and whatever place is assigned to Observation in scientific method must, on this ground, be assigned to Introspection.

63. A preliminary difficulty lies in the metaphor of an "internal eye," or "internal sense," co-ordinate with the external senses.* The physiologist knows

* KANT divides the senses into external and internal. "The first is that in which the body is affected by corporeal objects; the second that

of no such organ. Nay, more, were such an organ anatomically demonstrable, it would not suffice for the observation of what passes in Consciousness; the simple reason being that *no organ observes;* and Consciousness is the state of the Sensorium, the attitude of the sentient being alternately directed to each of

in which it is *affected through the mind.*" Here we have a complete departure from every physiological conception of a sense: the mind acting on the body to produce feeling—not in the mind, but in the body! "It is not," he adds, "the pure apperception, a consciousness of what the man *does*, for this belongs to the faculty of Thought, but what the man *suffers*, in as far as he is affected by the play of his own thought." —ANTHROPOLOGIE, § 13 and § 22. Comp. KRITIK: *Trans. Æsthetik*, § 2, where the inner sense is said to be the "special *form* under which the intuition of inward changes is possible." A glance at the various treatises shows how various and vague are the interpretations of this inner sense. SNELL (*Empirische Psychologie*, 1802) defines the outer senses as those which perceive objects in space; the inner sense is that which perceives what passes within us. The former have their definite organs; so must the latter have its organ, though we cannot define it, p. 68. DAUB (*Anthropologie*, p. 112) makes the inner sense the threefold sense of Time—past, present, and future; and places it on a level with the outer senses. FRIES (*Psychische Anthropologie*, 1820) says the inner sense is our susceptibility of being stimulated by mental activity; to it belongs the excitation of self-knowledge, consciousness, and the emotions of grief and joy, p. 45. He expressly declares that by outer and inner senses he does not signify bodily but spiritual organs, so that all the fundamental dispositions of the soul are called into activity in the same way from the outer and inner senses, p. 46. BENEKE (*Lehrbuch der Psychologie*, § 128) rejects the distinction altogether. FLEMING (*Beiträge zur Philosophie der Seele*, 1830) identifies it with the faculty of perception, and says it is sometimes synonymous with intelligence, inner vision, and mind, i. 53. . VORLÄNDER (*Grundlinien einer organischen Wissenschaft der Seele*, 1841) holds that the inner activities are perceived in the same way as the outer, and therefore require no special sense, which, rightly understood, is always a mediate organ for the perception of what is not immediately given. I need not multiply examples. The French and English psychologists usually designate the inner sense by Consciousness. CARDAILLAC (*Études Élémentaires de Philosophie*, 1830) limits it to the "sentiment de nos facultés," i. 116. "Comment pourrions nous savoir que nous sentons de mille manières différentes si chaque sentiment, chaque idée, chaque acte de la volonté ne faisait conscience de lui-même?" p. 118.

the various sentient affections. An animal moves before us, and we observe either its motions, its shape and colour, or the effect (curiosity or fear) produced in us. A distention of our intestines directs consciousness either to the unpleasant sensation or to its imagined cause.

The psychologist may perhaps object that, by the "internal eye," he means neither an organ nor a mode of observation limited to the sphere of Sense; but a mental function, which is that of observing all the changes and operations of Consciousness: "It is the Mind itself reflecting on itself." Now, since we are undeniably conscious of our mental states and operations, and thus the Mind does reflect on them, the metaphor of an internal eye may be accepted; all that remains for us, then, is to recognise it for a metaphor, and to explain, if we can, what are the conditions it expresses.

It is an idle objection that because the eye cannot see itself seeing, therefore the Mind cannot see itself thinking. The eye does not see at all, except through its co-operation with the Sensorium which greets the presented object.

> "Nor doth the eye itself
> (That most pure spirit of sense) behold itself,
> Not going from itself; but eye to eye opposed
> Salutes each other with each other's form." *

64. Kant, Broussais, Comte, and others have rejected the claims of Introspection; but on grounds that are not tenable. Kant declared that Psychology could not become a science of observation and experiment. Had he lived to our day he would have seen

* *Troilus and Cressida*, Act iii. sc. 3.

it not only become experimental, but some of its phenomena quantitatively determined, with as much precision as vital phenomena admit. He said, and truly, that the elements of inner observation cannot really be isolated and recombined at will, after the manner of physical or chemical observation. All subjective analysis is ideal only, and so far is greatly inferior to objective analysis. We have no microscope, balance, and reagent, to see what is too minute for the unassisted eye, to measure what is quantitative, to test what is compound in mental processes: our closest observation is *interpretation*. This granted, we reverse the medal, and see that in the *certainty* of Feeling there is more than a compensation for the *exactness* of objective analysis. Nay, even the observations of external data have all to be interpreted, and their value wholly lies in the interpretation. Kant's objection therefore only states a defect; and his final objection, namely, that the thoughts and feelings of others are inaccessible to us (*Metaph. Anfangsgründe*, preface), we have already argued to be an error (§ 51).

65. Comte is equally absolute, and, like Kant, declares internal observation to be impossible, because during the process the state of the observer is changed. "There is an invincible necessity by which the human mind is capable of observing directly all phenomena except its own." How, then, in the name of Common Sense, have we become aware of the existence of mental phenomena? It would have been more defensible had Kant and Comte said that observation of external phenomena was impossible because they could only be observed through the internal changes

which they produced. By a singularly unphysiological notion, Comte thinks it possible for man to observe his passions, "because they have a distinct seat from the observing faculties!" but "as to observing the intellectual phenomena during their operation, that is manifestly impossible." Perhaps so; but why? Because "the thinker cannot divide himself into two, one reasoning and the other looking on" (*Philos. Positive*, i. 35, 36).

To say that we observe our passions, is to say that we are conscious of the feelings as they arise, and can recall them. The same is true of our intellectual states. The same is true of external phenomena. Having observed a fact, we ideally retrace its stages; having been conscious of a mental change, we ideally recall its antecedents. The movement we observe is really effected before our observation is completed: it was a series of successive positions in space; we retravel through that series ideally, connecting the point of arrival with the point of departure. It is because we can recall these points that we know there has been a movement. It is thus also with the movements of thought. The part of pure observation, or *direct beholding*, is the same in both; and in both it has to be completed by reflection, *indirect beholding*, which reforms the particulars into a total. Comte would hardly have urged his argument had he not been biassed by the metaphor of the "internal eye," and by his conviction of the deplorable nonsense which this "internal eye" revealed to his contemporaries; elsewhere he has clearly expressed the very principle I am advocating.*

* "Toutes nos spéculations, même géométriques, s'y rapportent à des phénomènes qui ne sauraient être immédiatement explorés. On n'y

66. We are not to loosen our hold of the indispensable instrument Introspection because it is limited in its range. It may be only applicable to subjective changes, and need the co-operation of Observation, which is only applicable to objective changes; both may be, are, indispensable, and both have the same common ground in the sentient organism. The feelings externalised, and ideally connected with an External Order or Not-self, constitute objective consciousness in the perception of *things*, facts, events. The feelings no longer externalised, but ideally connected with the Inner Life or Self, constitute subjective consciousness in the perception of *states*, changes, results. The antithesis between facts and feelings, Physis and Æsthesis, is logical and necessary; but it is a logical artifice, not a psychical reality. Both modes of Feeling must be referred to one and the same Sensorium; their modality is due to the modes of stimulation. The various stimulations of the organs only become feelings in so far as

peut proprement voir que des directions simultanées ou successives, d'après lesquelles *l'esprit doit construire la forme ou le mouvement que l'œil n'a pu embrasser.*"—COMTE: *Politique Positive*, i. 500. Precisely this is the construction of a mental process.

As a specimen of the nonsense alluded to in the text, take the following declaration from VICTOR COUSIN, the most accredited of COMTE'S contemporaries: "La méthode psychologique consiste à s'isoler de tout autre monde que celui de la conscience, pour s'établir et s'orienter dans celui-là, où toute est réalité, mais où la réalité est si diverse et si délicate" (*Fragments Philosophiques*, preface). Although crassly ignorant of every science, COUSIN had no misgiving in magisterially formulating the principles of scientific Method. He was quite at ease in speculation because he had never undertaken the rude labour of research; and he addressed audiences equally at their ease, equally flattered at being absolved from the drudgery of investigating facts, by the promise of a more valid enlightenment from simply looking in upon what seemed passing in their own minds.

they call the Sensorium into operation. There all the processes are blended, integrated, and in certain relative intensities become states of Consciousness; in lesser intensities, states of Subconsciousness; and in still lower degrees of relative intensity, states of Unconsciousness. We distinguish Vision from Touch, and both from Hearing, as modes of Sensibility, and assign each mode to its special organ of excitation; but we do not suppose for each a different Sensorium. In like manner we distinguish between the feelings which arise from external stimuli and those which arise from internal stimuli; changes in us that are referred to changes outside, and changes that are referred to changes inside; but it is only thus that objective and subjective consciousness are distinguishable. The object or thing is a group of feelings, occasioned in us, we believe, by a *substance* which is part of the great whole—Nature. The perception, as a subjective state, is a group of feelings, occasioned, we believe, by another *substance*, which is also a part of the great whole—Nature. Even those philosophers who believe that the substance of the Mind is not in any way allied to the substance of objects, have still to admit that mental and physical phenomena are only accessible to us through Feeling; the divisions, therefore, which we establish remain from first to last divisions of feelings.

67. If this seems too subtle for practice, too metaphysical for inductive science, we may fall back on the plainest fact of experience, which assures us that states of consciousness, whatever their origin, are feelings capable of being *re*-felt in the forms of images and memories. Here is the answer to those who

puzzle themselves with the question, How can the mind think itself thinking, or the eye see itself seeing? and then declare that the mind cannot observe its own operations. The fact is that the mind does observe its operations—and precisely in the same way that it observes any other operations. Because they are felt and re-felt under varying conditions, and are capable of being discriminated, classified, generalised, and experimentally modified, they are data for scientific constructions. One example shall suffice. We are quite sure that we remember past events, and can retrace their order of occurrence; this is an operation; but we are equally sure that we *remember having remembered;* this is consciousness of the operation. The operation having been performed many times, and under very different conditions, it is generalised and abstracted as a mental function, Memory, having its peculiar laws.

CHAPTER VI.

LIMITATIONS OF THE INTROSPECTIVE METHOD.

68. HAVING vindicated the claim of Introspection to a place in scientific Method, an aid without which all the facts of Observation would be as meaningless as the words on a printed page to the eye of one incapable of interpreting the signs, we have now to inquire into the validity of the claim set up for it by certain psychologists, who hold it to be the only efficient instrument of research. On a first glance it seems obvious that a science of the facts of Consciousness can only be constructed from data directly revealed in Consciousness. "To understand the mind and its operations we must look within, and watch those operations in ourselves, they being necessarily unobservable from without." Plausible as this appears, it rests on the double error of restricting the science to the facts of Consciousness, and to the observation of processes in the *individual* mind.

69. I have already pointed out the ambiguity of the term Consciousness, which means both Sentience in general and a particular Mode of Sentience. It is the latter meaning which the term commonly carries in psychological discussion, though not without frequent use of the former. A great gain in clearness would be to substitute the term Experience

whenever the subject-matter of Psychology is treated of. Consciousness in its usual acceptation is too limited: it excludes many unconscious processes which are indubitably mental, and which, since Leibnitz directed attention to them, have been recognised as essential to every theory of the soul. In 1846, Carus boldly affirmed that "the key to unlock all the problems of Consciousness is to be sought in the Unconscious." * The paradox loses its strangeness and becomes luminous if we extricate it from the contradictoriness of its terms, and translate it into the expression of the constant and definite relation between function and organ, between mental and bodily states. Thus translated, the formula will run somewhat in these terms: The key to unlock all the problems of mental activity is to be sought by studying each strand of observation, organic facts and mental experience, the Mechanism and its History.

We are thus made aware of the existence of processes in the sentient organism which belong as such to the psychological order, are facts of Sentience, and yet are unconscious; and because they are unconscious, they lie outside the range of Introspection, to fall within that of Observation and Inference. They belong to objective science and must be studied there, not in the personified negation, a mystic Unconsciousness.†

* Repeated by him in the opening of his *Vergleichende Psychologie*, 1866. The idea has been worked out with great extravagance by HARTMANN in his *Philosophie des Unbewussten*.

† "Il est jusqu'à présent établi que tout jugement conscient est la conclusion d'une série de jugements enfouis dans l'inconscience, et qu'ainsi, pour leur étude, le sens intime ne peut nous être d'aucun secours. Les jugements inconscients appartiennent au passé de notre individu, et comme ce passé se perd à son tour dans celui de l'espèce

70. Consciousness is too limited a term. Experience, on the contrary, is comprehensive of all sentient facts. While there is a contradiction in speaking of "unconscious sensations," there is none in speaking of "unconscious experiences;" these take their place among the mental modifications acquired through individual history. Experience has the further incalculable advantage of transcending the facts of individual feeling and including those of the race; so that while we cannot be said to be conscious of what passes in the mind of another, we can and do, through Observation and Inference, and that sympathetic inward movement which may be called mental contagion, receive it as an element in our Experience; and the experiences of millions of men co-operate in the determination of the thoughts and acts of the individual.

In view, therefore, of the ambiguity of the term Consciousness, we may adopt that of Experience; but as it will be difficult to avoid altogether a term which has obtained such wide circulation, some of its ambiguity may be escaped by distinguishing between objective consciousness and subjective consciousness, to mark the mental operations which are mainly directed to *objects* from the operations mainly directed to the *feelings*. Objective consciousness would then designate what Leibnitz calls those "perceptions dont on ne s'aperçoit pas"—that is to say, the aptitude of mind in which we are contemplating things or events as such, and not as changes in us, or as feel-

nous voilà conduit a rechercher les prémisses d'un jugement actuel dans les actes intellectuelles des premiers êtres sensibles."—DELBŒUF: *La Psychologie comme Science Naturelle*, 1876, p. 77.

ings. These external changes must be recognised as no less truly *in* the sphere of Consciousness, since they are only present to us as changes of Feeling.* But their significance to us is attached to the Not-ourselves. It is only when they are viewed from the personal side that they become psychological facts. The movements of the planets, the combinations of gases, the structure and functions of organisms, are objects of physical and biological science, and as such lie outside the domain of Psychology. But these may be studied from the subjective side, as feelings and relations of feelings, how we know them, and how they are related: they then become psychological facts. The consciousness—experience—which in the one case had an objective attitude, in the other case has a subjective attitude. It was consciousness—feeling—experience—in both cases.

71. Some reader here may ask: In what does the study of objective consciousness, thus explained, differ from Physiology? Physiology and Psychology, I repeat, though respectively concerned with the same organic phenomena, are distinguished in that the former treats primarily of the Mechanism whereby the functions are *effected*, the other of the functions themselves, and how they are *related*. The objective facts of the Mechanism and its operations belong to Psychology when viewed in relation to subjective Experience, that is, when the material mechanism is interpreted in terms of the mental mechanism. For

* This distinction has been employed by Professor BAIN: "Are we conscious in any shape when engaged exclusively upon the object world? It seems to me that we are, and I designate this the object-consciousness, to distinguish it from the elements of the subject-consciousness."—*The Emotions and the Will*, 3d ed. p. 546.

example, a false perception may be interpreted by a diseased condition of the organs: it is then a physiological fact; or it may be interpreted as an error of judgment, the premisses not having their normal position in the context of experience: it is then a psychological fact.

Unconscious processes cannot, of course, fall within the range of Introspection. They are, however, observable in their results, and interpretable by reflection. If we have formed a conclusion or performed an action unconsciously, we may discover, on analysing it, that it could not have been performed without the co-operation of sentient and logical processes such as we recognise in conscious operations. Some writers think that such actions belong to Physiology, because they are unconscious, and are due to organic states. They belong to Physiology or to Psychology, according to the point of view from which they are regarded. The events do not change their character with our change of view. The organic state and the sentient state are the same state under different aspects. The proof that the unconscious events were of the psychological order is twofold: first, that they were processes in a sentient organism; secondly, that their genesis was from conscious processes. The same proof is ready for the so-called "unconscious sensations." We are often quite unaware of the external stimulus and the consequent stimulation, yet are made aware of both by some after-effect. Fechner says that opposite his bed there is the black funnel of the iron stove conspicuous against the bright wall, which is the first object visible when he opens his eyes in the morning. Very often he does not see

this—that is to say, he has objective experience of the fact, but is subjectively unconscious of it, *i.e.*, he is subjectively occupied with some *other* feeling; yet he sometimes notices that if accidentally he closes his eyes he becomes aware of a vivid image of this funnel (a negative image), which is clear proof that the sensory stimulation produced its normal effect on the organism, though this passed unconsciously when submerged in the flood of stronger waves.

72. Helmholtz, after adducing examples of habitual unconsciousness in normal sentient processes, which may become conscious by attention properly directed, remarks that we are wont to interpret sensations mainly in their objective relations, as means of directing our actions and knowing the external order; their subjective aspects are mainly interesting in a scientific view, and would greatly interfere with the ordinary use of our senses were they attended to. Hence it is that while we attain to an extraordinary delicacy and certainty in objective observation, we not only fail to attain this in subjective observation, but acquire in a high degree the faculty of entirely disregarding it.* We have already admitted that Introspection is scientifically defective, in that while its disclosures are absolutely *certain* they are never *exact*, and are always individual, never general. They do not admit of being measured by sharply defined standards of comparison; they may be discriminated, named, and classified; they cannot be numbered, measured, compared. They have no common measure, only a common nature. One feeling may be more intense than another; it may be like another in

* HELMHOLTZ: *Physiol. Optik*, 432.

an indefinite degree; we can never say "how much more" nor "how like." There can be no equation, except through the substitution of objective standards. So that it is only by having recourse to Observation that we can interpret the results of Introspection in terms of exact science, as it is only by Introspection that we can interpret the significance of Observation by the context of experience.

73. We might disregard the want of exactness, and point to the compensating condition of certainty, were it not that Introspection, in its direct operation, is limited to the states of the individual observer. By looking inwards he can only see what passes in his mind; but Psychology is a science of the human mind, not of any individual mind. No science can be founded on single specimens: it formulates general laws, not cases. The individual observer has his idiosyncrasies, peculiarities belonging to his organism and education; these have to be eliminated or reduced to law. If the sexual tendency is weak in him, and the aptitude for abstract speculation strong, he will greatly err in making himself the standard, and by it interpreting the motives of others. If he has been reared in a medium of high civilisation, he will find in his mental structure organised judgments that seem elementary principles, which, nevertheless, he may learn to be entirely absent from the minds of men reared in other times and countries; what are intuitions for him are inconceivable to them.* An in-

* "Many conceptions," says KANT, "arise in our minds from some obscure suggestion of experience, and are developed to inference after inference by a secret logic without any clear consciousness either of the experience that suggests or the reason that develops them." Until those beliefs that have grown up in the dark recesses of the soul have

quiry into the genesis of his sentiments and opinions would assure him that his mind was the product of a history; and with this assurance he must conclude that, since his history has not been precisely that of other men, their minds cannot be precisely like his own. His consciousness, therefore, cannot be the standard; it is only material for science in so far as it is in general agreement with the consciousness of fellow-men. By striking off what is individual in each, we may get at a conception of what is common to all.* It is thus we learn approximately to estimate the operation of motives and logical procedures, not only in ourselves but in others. By including various races of men and various stages of culture, supplementing these by zoological observations and physiological inductions, we rectify in some measure the deficiencies inherent in Introspection, and reach the solid data for a general science.

74. I shall perhaps be told that no psychologist ever doubted this—none ever proposed to formulate the general laws from his own individual experiences. But in that case the Introspective Method forfeits its claim to be the exclusive Method of Psychology; and I further ask, In that case what becomes of the assertion so constantly advanced, that the phenomena of

been brought into the light of conscious reason we can have no confidence in their validity. And very often there is a certain reluctance to such a critical operation, especially in the case of conceptions that have grown with our growth, and become, as it were, an essential part of our habits of thought. Hence it is that the profound philosopher so often "becomes a sophist to defend the illusions of his youth."—Cited by CAIRD: *Philosophy of Kant*, p. 151.

* Except that idiosyncrasies throw the light of possibility over abnormal workings of the organism, and may thus have a value analogous to that of pathological cases.

Consciousness are limited to our inner sense, no man being able to observe what passes in the mind of another? Of two things one: either the thoughts and feelings of other men are inaccessible to us, in which case Psychology is impossible; or they are accessible to us, in which case another Method must be followed beside that of Introspection.

In § 51 we touched on the question of accessibility, and saw that the feelings and thoughts of others were accessible to us, precisely in the way that all which is not ourselves is accessible; their objective expression being interpreted by our feelings. It is certain that I cannot have the feelings of another, since I cannot *be* that other. But I can know that other, and know that his feelings are like my own, as he is like me. I am forced to pass out of my own subjective sphere whenever I regard the known not as feelings but as objects; yet all objects are interpreted as feelings or signs of feelings. What is accessible to me on the objective side is not its subjective aspect; therefore I cannot know your feelings as subjective facts, but I can know them objectively. I can observe the effect of certain stimuli on your senses, and the effect of certain moral suggestions on your actions. I see you reacting as I myself react; I hear you speaking as I myself speak, reasoning as I reason, loving as I love, trembling as I tremble. In Literature and Art there are expressed the thoughts and feelings which I can interpret by my own. I am certain that the truths of exact science are apprehended by you as by me; and I am as confident in my knowledge of the laws of mental operation being the same in you and in me as I am in my knowledge of the external

order. Kant implies this when he maintains that "not only is inner experience produced in the same way as outer experience," but also that "it is secondary and dependent upon outer experience, so that we can only have consciousness of our own inner states as such, in contrast with and relation to a world of external objects." *

75. If, then, it is indispensable that Psychology should formulate the laws of the human mind, and not simply classify the individual states, the feelings and thoughts of others must be accessible; and if these are not accessible on their subjective side, access must be sought on their objective side. We must quit Introspection for Observation. We must study the mind's operations in its expressions, as we study electrical operations in their effects. We must vary our observations of the actions of men and animals by experiment, filling up the gaps of observation by hypothesis. When the facts are known, and their conditions are known, so that experimentally the facts are reproducible, the aim of research is reached; the doctrine may then be constructed.

And this leads us to remark on the absolute incapacity of Introspection, even were its range coextensive with psychical phenomena. There is something naïve in the idea that simply watching the changes in Consciousness will reveal the complexities of the phenomena and the laws of change, to say nothing of the conditions which determine the phenomena. No science can be constructed out of data furnished by observation of the phenomena as they pass. We observe results, and analyse these into

* CAIRD, p. 287.

their components; we complete the visible order by the invisible. Of what avail was the observation of falling bodies? Millions upon millions of observations under innumerable varieties of circumstance left men blind to the essential and invariable conditions of a fall. Newton imagined and then proved the hypothesis that these conditions were—mass and distance from the earth's centre: these two invariables were expressed in the law of gravitation. From that time, observation of falling bodies has been fruitful and the fact intelligible.

CHAPTER VII.

THE FREEDOM OF THE WILL.

76. And here, in order to exemplify the illusoriness of the Introspective Method when pursued exclusively, I am tempted into a slight digression. The advocates of Free Will appeal to Introspection, and assert that the verdict of Consciousness is unequivocally in favour of this freedom. "Sir," said Johnson, in his characteristic way, "we *know* the will is free, and there's an end of the matter."

In certain relations the verdict of Consciousness, as I have elsewhere said, is the highest, the ultimate authority. No adverse proof can overturn my certainty that I feel this or think that. I feel a stinging sensation in my foot. No certainty can be more absolute. I think that an animal is stinging me. Again it is an absolute certainty to me that such is my thought. So far Consciousness has a simply direct supremacy, and Introspection is but another name for it. But the conditions or causes of my sensation are *not* given in my consciousness: my thought requires to be tested by observation, and the supposed animal being non-existent, analysis may have beforehand disclosed various causes of a stinging sensation, one of which may agree with the conditions of my case.

Now, in relation to the freedom of the will, what

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does Consciousness actually tell us? It tells us that we choose; that out of several contemplated courses we make choice of one. But choosing, like a stinging in the foot, is an experience which may be analytically reduced, and its conditions tested by observation. That we are conscious of choosing does not prove that our exercise of choice is equivalent to Free Will, when this term is used to signify that mental actions can go on apart from the general system of sequences. All the massive evidence to be derived from human conduct, and from our practical interpretation of such conduct, points to the conclusion that actions, sensations, emotions, and thoughts are subject to causal determination no less rigorously than the movements of the planets or the fluctuations of the waves. Indeed, no modern thinker of any worth would affirm that our volitions are uncaused,—are freed from the inexorable subjection to conditions. The question is, What are the conditions? While admitting that the strongest motives determine the actions, we all recognise that our freedom consists in our power of choice among conflicting motives, and it is this power which endows a motive with its superior energy. We feel that we are free to choose, and know that the rejected motives *might* have been selected motives. Over and above the particular motives, the individual volitions, we are conscious of a Will, a Personality, which determines these to be what they are.

77. No sooner do we quit the metaphysical for the biological point of view, and regard Volition as a function of the organism, than the asserted freedom is seen to fall within the limits of determinism as a

particular case of the general law of causation. It is with freedom as with chance. When we say something happens by chance, we do not mean that it had *no* conditions; we mean that the conditions are unforeseen, unknown, out of the regular order of appearance. It is by such chance that one black ball is grasped among many white balls; but the hand was moved in this particular direction by rigorous conditions. Because we do not know what these were, and because we know that, so far as generalised laws are concerned, other conditions might have operated and other balls been chosen, we call the selection an accident. The organism is a part of Nature, and is swept along in the great current of natural forces. But the organism is also a *system* of forces, and this system has within itself the conditions of its special actions; just as our world is a part of Nature, yet, being a system, its movements are in some sense independent of the solar system. The vessel which is swept onwards by the waves does not determine the individual movement of the sailors. Each sailor knows that he moves with the vessel, but knows also that he is free to move to and fro on deck. The voluntary actions are actions of the organism. On the physical side no one can doubt that every stage is rigorously determined by the co-operant conditions; the physical mechanism is, indeed, very imperfectly known, but we are quite sure that there is no freedom (in the sense of indetermination) in its action. On the mental side we have the subjective correlates of these objective processes: every element in Sentience is represented by a corresponding element in cerebral re-arrangement, all changes in Feelin being

neural tremors and groupings of tremors. To suppose that when several conflicting motives arise there is no corresponding struggle among neural groups, and that when a choice is made there is no corresponding neural arrangement, is to assume that Will is not the function of the organism, but an independent entity.

78. Analysis of a voluntary action exhibits an intention, an effort, and a motor result: three different stages of Feeling, any one of which may exist separately, or in other combinations. We may intend to perform an act, but make no effort to realise the intention, which then remains merely a *cerebral rehearsal* of the act; we may make the effort, but be unable to execute the act, or may arrest it when begun. The organism, solicited by a variety of stimulations which excite a variety of nascent impulses, can only discharge in one motor effect at each moment, that one being the resultant of the composition of forces. All these nascent impulses are unrealised, although present as states of Sentience, more or less conscious, and each is *capable* of becoming a motor or motive under other combinations. In psychological language, the resultant is the chosen motive, and is conditioned by three determinants,—1°, The nature of the stimulus; 2°, The momentary state of the mind; 3°, The individuality of the person.

Now Consciousness, while revealing the fact of hesitation and choice, tells us that out of several impulses one has prevailed, but does *not* tell us that this one prevailed owing to *extra*-organic conditions; and if it seems to tell us that some other *might* have been chosen, this illusion is explicable. While obeying the prevailing impulse, we are conscious and sub-conscious

of simultaneous solicitations in different directions; in recalling the event, we recall some of the nascent impulses which were in conflict; and recalling thus the rejected motives, we recognise in each a motive which was formerly, and may again be, selected. This reflection on our mental operations gives the consciousness of *variability* in impulse, and the persuasion that we *could* have chosen any one of those rejected. But the persuasion, being interpreted, means that under the given conditions an action "might have been" differently determined:—this "might have been" is the *imaginary displacement of the actual conditions* in favour of others. When it is said, "We might have chosen another motive had we so willed," the meaning really is, that another motive would have prevailed had it been stronger at the moment; and the sympathetic emotion, the dread of wrongdoing, the vision of evil consequences, or the ennobling resolve, would then have sufficed to determine us.

79. The motor-impulse in a hungry dog, though strong, is not strong enough to make him steal a bit of meat, if at the same time he remembers the beatings which similar indulgences have brought upon him. The conflict between hunger and fear is decided by the energy of his hunger or the vividness of his revival of past beatings. Very often the strength of the primary impulse is imperious. A fox wildly running from the dogs has been known to step aside to seize a duck on its path. Gall relates the case of a robber stealing the silver snuff-box of the priest to whom he was making a dying confession, habitual impulse blinding him to the futility of his theft. The

educated man foresees remote consequences, and this vision enters into the complex of his motives. The state of choosing is, in physiological language, an unresolved reflex; the choice is the resultant.

80. Owing to the complexity of the conditions, there is a variability in human actions which renders them difficult of prediction; and Mr. Sully well remarks that "to the majority of minds inability to predict seems a mark of the absence of objective uniformity" (*Sensation and Intuition*, 1874, p. 131). Even in our own case, it is often impossible to detect what were the conditions which made one motive dominant; the more so because some of them lie in the unconscious region. Spinoza thought that men believe themselves to be free because they are conscious of their actions but ignorant of the causes. Yet there is something more in it than this. For we are ignorant of the causes which determine the particular direction in the growth of leaves and limbs, the colours and dispositions of animals, &c., yet we never doubt that causes are in operation, and that for each particular detail a particular determinant was needed. What is this something more? It is our conception of a Personality, which is not limited to the momentary feelings, and not exhausted in the individual act. The mere feeling does not suffice. We are conscious of certain operations of our organs, which we do not assign to volitional impulses. In a voluntary act there is the intervention of the *we:* that is to say, accompanying the feeling of the act itself there is a vague feeling of the act as one manifestation of a variously manifesting Self. This conception of a Self or Personality as superior to and directing each

particular manifestation is another aspect of the relation of Organism and organs. Once formed, it comes to represent an abstract Will which dominates concrete volitions; so that although each particular volition is assigned to a motive, and is thus admitted within the rigorous limits of determinism, the motives themselves are said to be under the power of a Will which is not determined. This is tenable on the understanding that a metaphysical abstraction has no physical determinants, and that the antithesis of mental and mechanical is something more than an antithesis of aspects; but it is not tenable when we reduce the abstraction to its concretes in subjective and objective terms, and view the Will as the generalised expression of all volitional impulses.

81. The biologist recognises the fact of deliberation, choice, which Consciousness testifies; recognises, moreover, that each particular choice is determined partly by the fixed conditions of the Mechanism, and partly by the variable conditions of Experience; therefore that moral causation is conspicuously different from physical causation, though both are examples of necessary sequence, both are incorporations of the operant conditions. That we have, within certain limits, a power of arresting and redirecting the action of our organs or the current of our thoughts,—that we can acquire such a mastery over these as to execute with ease actions which the motive Mechanism was incompetent to perform,—that with such control we can place ourselves under the tutelage of Experience, and so enlarge, and even alter, the primary tendencies, till what was once the immediate reflex of the Mechanism becomes abhorrent and is sup-

pressed—all these facts of self-formation are as fully recognised by the biologist as by the metaphysician; and the biologist conceives that they admit of an intelligible explanation without recourse to *extra*-organic agents.

82. So long as consciousness of freedom means consciousness of deliberation, it simply means that the sentient organism is capable of various simultaneous excitations. We are as "free" to perform one action rather than another, as we are "free" to think one conclusion rather than another; that is to say, each action, each thought, is possible under certain conditions, and will be produced whenever these conditions are untrammelled. Out of various ideas which emerge at the moment, a conclusion is logically, inevitably reached. Opinion is "free" in the sense that another conclusion would have been reached had the premisses been different; but opinion is not free to reach another conclusion while the premisses remain unchanged. We are free to admit or to reject a space of n dimensions; no man is free to think what he pleases of the square of the hypothenuse when the geometrical demonstration has been followed. If your conclusion differs from mine on any given point, it is because the premisses have not the same significance to you as to me. Our common freedom consists in this possibility of the same symbols having different significates, as our free will consists in the possibility of the same sentient excitations having, under different states of the organism, different resistances.

83. Volition is Desire realised. The state of feeling which, prompting to action, is yet from some

cause, internal or external, unable to find its active response, is the blind or confused stirring we call Desire. If accompanied by a cerebral rehearsal of the act,—which means a more or less clear appreciation of the means by which the act may be effected, —and if this rehearsal is succeeded by a motor impulse, it is called Volition. We may desire the unattainable, we do not will it.

No one supposes that our *desires* are free. Such freedom as there is consists in the conflict of desires, and the choice determined by the predominance of the most urgent; and this predominance is partly due to the strength of the immediate stimulus, and partly to the vision of possibilities and consequences which the desire awakens. It is here that Desire passes into Volition; so that however powerful a stimulus may be in exciting a desire, if it be connected in Experience with painful consequences we are thereby educated to resist the desire, or to avoid incurring the stimulus which awakens it. Because the Will is thus the abstract expression of the product of Experience, it is educable, and becomes amenable to the Moral Law, as architecture is amenable to mechanical laws, and as thinking is amenable to knowledge.

84. The whole dispute has arisen from two speculative mistakes: first, the personification of the abstraction Will as something apart from the total of volitional impulses, and, therefore, removed from their conditions; secondly, the analytical artifice of detaching a particular feeling from the complex of co-existent feelings, and supposing that this feeling

has an unvarying value, whereas its value, as a motive, is always relative. Because a man will

"Scorn delights and live laborious days"—

will endure the privations of hunger and the pains of cold and fatigue, that he may achieve some deed of succour, some object of ambition, or some mountaineering feat, we do not suppose that he is insensible to fatigue, cold, and hunger, or that he cannot enjoy the rejected delights. Each of these motives will, under other conditions, determine their appropriate responses; but under the vision of some prospective end these impulses are suppressed. It is in this way that our Personality intervenes to shape our conduct: an abiding sense of our dignity, or of our duty, or a loving devotion to another's welfare, suffices to restrain all the solicitations which are seen to be inconsistent with it, precisely as a vision of being beaten restrains the hungry dog. It is thus, as Thomas à Kempis says, *occasiones hominem fragilem non faciunt, sed qualis sit, ostendunt.* This is the only sense in which we can say that the conscious Ego is the cause of the determining motives.

85. In conclusion, let us note that the old dispute about liberty and necessity is now-a-days resolved into a question of whether the Mind is a function of the Organism, or an entity operating on and through the Organism. By necessity may be understood either, 1°, A rigorous invariableness of sequence, irrespective of any variations in the conditions, or, 2°, An invariableness in the conditions themselves: a clockwork necessarily acts in only one way if it act at all.

Now the testimony of Consciousness is invoked to prove that such invariableness is not the case with our actions, and that the Organism is to a great extent self-regulatively variable. Owing to the popular misconception of the term Mechanism when applied to organisms, there is the notion that if our actions are mechanically determined they must have the fixity of invariableness observed in machinery; and since Consciousness assures us that our actions are not thus invariable, the conclusion reached is that they cannot be mechanically determined. Our consciousness tells us we are free in the sense that we have a range of motives surveyed by a Personality which is the incorporation of our past experience, and carries the prevision of alternative futures. It does not tell us that our motives are unconditioned, nor does Biology permit us to conclude that Consciousness, Self, Personality, is unconditioned. The only question therefore is, What are the conditions? It is the task of the psychologist to specify them.

CHAPTER VIII.

OBJECTIVE ANALYSIS.

86. It is thus clear that our Method, while availing itself of the indispensable aid of subjective analysis, has also to call upon objective analysis on a very extensive scale, since every mental fact is at once a state of Feeling and a state of the Organism. While the order and genesis of mental facts are not wholly laid bare to Introspection, their significance is wholly hidden from Observation. The physiologist could not stir a step in interpreting the facts of the sentient mechanism were he not incessantly translating them into facts of Feeling. Without the illumination of Introspection he could see nothing but molecular movements in neural processes. Thus do subjective and objective analysis go hand in hand. Each has its advantages and limitations. The physiologist observes and classifies the activities of the organism, assigning these grouped classes to particular systems and organs, reducing thus the facts of function to facts of structure. Having succeeded in reducing particular functions to general functions, and functions to properties of tissues, he attempts a synthetic reconstruction in which the facts observed are seen to be consequences of the factors.

The procedure of the psychologist is analogous, but

from another station. He studies the facts and laws of Experience, to which the facts and laws of the Mechanism are subordinate. He therefore begins by observing and classifying the various forms of Experience, reducing them to elementary Feelings, and these again to their conditions, namely, the organic activities and the cosmic and social environment. What Anatomy is to the physiologist, Physiology is to the psychologist. If the former limited his science to the observation of the salient activities without reference to structure, he would conclude that Respiration, Digestion, Locomotion, Vocal Expression, Manipulation, &c., were due to so many independent principles, and would never suspect that the Sentient Mechanism was involved in each of these, no less than in Sensation, Emotion, and Thought. If the psychologist limited his science to Introspection, he would conclude—as indeed psychologists have concluded—that Sensation, Perception, Emotion, and Volition are the independent activities of different agents. Forced to find some common ground for their dependence and unity, he would feign the presence of a Psychical Principle. This substitution of one mystery for another is the metempirical attempt to explain the unknown by the inconceivable; for, as Kant truly says, the Psychical Principle cannot be made the object of positive thought, since we have no data for it in our sensations, and we are thus driven to call in the help of negatives to aid us in thinking of that which is utterly different from all that is sensible. Instead of seeking in the organism the conditions of organic activities, psychologists preferred the fictions of imagination, and referred psy-

chical phenomena to an abstraction personified as the Psychical Principle. An ingenious thinker might as well detach all the motor phenomena observed in organisms—the walking, flying, swimming, dancing, fencing, &c.—and erect these into a separate science. To explain the observations he might invent a Motor Principle, which would absolve him from all troublesome study of the motor-organs and their vital conditions. His science would have the same value as that of the metaphysical psychologist.

87. It will, perhaps, be thought needless now-a-days to insist on the necessity of studying the organism, most recent works being conspicuously occupied with nerve cells, fibres, and centres. There is even danger of the reaction against the Introspective Method being carried too far. A warning, therefore, may fitly here be suggested. That warning is, not to place reliance on the extremely immature knowledge of the structure and functions of the nervous system which has hitherto been reached, but to accept the statements of our text-books as provisional hypotheses, not as secure data for deduction. Much of what passes for physiological explanation of psychological processes is simply the translation of those processes in terms of hypothetical physiology. We are indisputably certain of the facts of Feeling, even when our subjective analysis of these into their factors is open to question; but no one who is competent to speak on the matter would affirm that our translation of these into definite cerebral processes is at the best more than a probability. In my previous volume, it has been shown how very far we are from accurate knowledge of nerve-tissue, and how contradictory and

chaotic are the attempts at localising particular functions in particular portions of the nervous system. I can never read without a smile the confident statements which credit certain nerve-cells with the power of transforming impressions into sensations, and other cells with the power of transforming these sensations into ideas—which assign Volition to one centre, Sensation to another, Perception to a third, and Emotion to a fourth. As to the minute anatomy of the nervous system, were it as exact as it is often supposed to be, its value to the psychologist would be insignificant compared with the more accessible observation of the organic functions. Unless illuminated by a study of the organism as a whole, investigation of nerve-cells will throw no more light on Psychology than investigating the molecular structure of iron rails will explain the Railway System. That a congested liver will influence the intellectual and emotional processes is a demonstrable fact; that a mental agitation will arrest digestion and cause palpitation of the heart is also demonstrable; but that an impression on the skin has to be transmitted to the optic thalamus before it becomes a sensation, and from thence to the cerebral convolution before it becomes a perception, is still very far from a demonstrable fact; and the parts played by cell and fibre in such transmission and transformation are at present utterly imaginary. For any one, therefore, to propose an explanation of mental processes by adducing imaginary connections between neural elements having imaginary properties, is to explain the imperfectly known by the unknown.

88. I have given so much study to the minute

anatomy of the nervous system, that I shall not be suspected of indifference to its future value, or of joining in the contemptuous rejection which animates those who pronounce it materialistic—a rejection on a par with Bacon's sneer at Copernicus and Goethe's at Newton for their one-sided treatment of Astronomy and Optics on mathematical methods. The union of Physiology with Psychology is henceforward assured, like the union of Algebra with Geometry, by which both sciences have been enormously improved. Lagrange well said that so long as Algebra and Geometry were independently studied, their progress was slow and their applications limited; since their union they have given each other support, and have moved rapidly towards perfection.

89. In objective analysis we seek to complete and verify the data of subjective analysis. It embraces observation of men and animals, as organisms and as units of a society. The facts presented by Zoology and History have to be reduced to their conditions in Physiology and Sociology. Until this reduction is effected, our observations only disclose symptoms, not causes.

A glance at the history of Medicine will illustrate my meaning. The old pathologists—of Body and of Mind—classified diseases, abnormal states of the organism, according to the salient symptoms. They vainly tried to cure the diseases by attacking the symptoms. The method now followed is that of classifying diseases, not according to symptoms, but according to functional derangements; and their cure is sought in the removal of the conditions of such derangements. The old plan was necessary so

long as men were very imperfectly acquainted with functions and organs. The symptoms were not only what obtruded themselves on notice, they were all that could accurately be conceived; they must always be the first *indications* for research.*

Progress of observation disclosed that similar symptoms reappeared in very various combinations, so that diseases manifestly due to various causes and to derangements of widely different organs presented many of the same salient appearances; and thus, when the treatment of symptoms was pursued, the remedy which proved beneficial in one case proved disastrous in another. The modern pathologist endeavours to assign the symptoms to organic disturbances, direct or sympathetic. These disturbances may be, 1°, *structural*—a lesion of tissue or an alteration of its *plasmode*;† 2°, *functional*—an excess or arrest of normal activity of the organ by direct or indirect excitation. When he has acquired definite knowledge of normal and abnormal organic conditions, he has acquired a corresponding knowledge of the diseases in which certain symptoms appear; and when he has learned the means of modifying these conditions, restoring the organ to its normal activity, he has learned all that can be learned of cures.

* The mistake of accepting symptoms for causes is natural but unscientific. The gross errors it leads to may be seen in abundant examples. Here is one:—There is no symptom of Insanity more conspicuous than Hallucination; it is, nevertheless, occasionally observed in people who are not in the slightest degree insane, and it is not always observed in the insane. If a man believes that he is "possessed" by a demon having entered into his body, he is said to be insane, and generally is so; yet hundreds of perfectly sane ignorant people have believed themselves "bewitched" or that a malevolent stranger has cast "the evil eye" on them, the effect of which will be their destruction.

† For an explanation of this see *Physical Basis of Mind*, p. 47.

90. Psychology must be pursued on a similar plan. Hitherto its classifications and its applications to Education and Insanity have been too largely founded on the consideration of symptoms instead of the organic conditions. Naturally so; the pedagogue and the alienist had little else to direct them. The salient manifestations they could note; of the latent causes they were ignorant. They could, therefore, only teach and treat by rude empirical methods. A change is happily gaining ground, at least among instructed alienists, who now universally recognise mental aberrations as dependent not on sin, not on spiritual perversion, but on functional derangements having organic causes. They no longer think of curing Insanity by punishment or by sermons; they treat it as a malady. The pedagogue has not yet got so far. The traditional conception of the Mind as something different from the activities of the organism determines, implicitly or explicitly, his method of Education. He tacitly assumes that all minds are specifically, no less than generically, alike, and he therefore teaches the same lessons in the same way to all.

ANIMAL PSYCHOLOGY.

91. Once recognising the necessity of observing the sentient activities of men and of animals, and of interpreting these by reference to their organic conditions, what more natural suggestion than that our study should begin with animals? The comparative simplicity of their organisms and their manifestations would seem to mark them as furnishing the safest prolegomena to Human Psychology. I have already

stated (in the preface to *Problems of Life and Mind*) that in 1860 I was led to collect materials with this view, but that fuller consideration showed it to be impracticable. To show why it was impracticable will be an answer to my Russian critic, M. Wyrouboff, who (*La Philosophie Positive*, 1874, p. 106) objects to my "sin against scientific method" in not proceeding from phenomena that are general and simple to those that are special and complex; I ought, he thinks, to have made the exposition of the simpler cerebral phenomena in animals precede that of the more complex phenomena in man. This was my own opinion till experience proved its mistake. I found myself constantly thwarted by the fallacies of anthropomorphic interpretation. It was impossible, even approximately, to eliminate these before a clear outline of the specially human elements was secured. For example, we see bees at work, and see that they do not sting the keeper, but sting any stranger who may interrupt them; our interpretation is that they *know* their keeper and are *angry* when disturbed. Seeing them act as we act under analogous circumstances, we interpret their actions as we interpret our own. Yet to credit them with Knowledge and Emotion *like* our own is manifestly erroneous when we compare the conditions in the human Mechanism and Experience which *cannot* be present in bees. If we say the bees *know* the bee-keeper, we apply the human vocabulary to insect organisms. In that vocabulary Knowledge is the formula of Feeling. The bees, although they no doubt have Feeling, have not the same sentient mechanism, consequently have not the same Feeling as we have, and assuredly have not the same formula.

Granting, therefore, that the bees have sentient activities which may be called Knowledge and Anger, it is certain that these must be very different from such activities in ourselves; and until we have gained a clear insight into the special conditions which operate in human activities, it is hopeless, even approximately, to estimate the nature of the activities from which such special conditions are absent. There is a general resemblance between the sensitiveness of the bee and that of the man; between the agitation, as a *symptom*, of the thwarted bee and that of the thwarted man; between the stinging of the thwarted bee and the striking of the thwarted man: but the causes operating are not the same in each, the effects cannot be the same; and although we may speak of the agitation of the bee, it is only anthropomorphism to speak of its anger. If the bee is cut in two, its hinder segment will sting as vigorously as before; does this hinder segment feel anger? That the segment is sensitive, I admit, and this reflex stinging is the consequence. But between sensitiveness and emotion—between cerebral excitation and anger—the distance is great.*

* It is this distance which is constantly overlooked. Thus in a recent physiological work of repute the sensitiveness of the bee's segment is adduced in proof that "chaque segment paraît conserver pour son propre compte la faculté de sentir, de se mouvoir volontairement, *sciemment*, et *même de s'irriter*. Chaque groupe ganglionnaire partiel ainsi formé devient un centre partiel qui se suffit et possède les principales propriétés *et facultés de l'ensemble*. Que va dire la Metaphysique? Une *intelligence* qui se coupe à coups de ciseaux!" On reading this passage a metaphysician would surely remark that nowhere are the products of a whole to be found in any single part; "the faculties" and their generalised expression "intelligence" can no more belong to one single organ, than Literature can belong to the steam-engine which moves the printing-press.

92. To attribute knowledge and emotion to bees is either to speak in metaphors or to follow the classification by symptoms. And what is conspicuous in this example is equally discernible in all interpretations of animal feelings. Anthropomorphism is inevitable so long as we follow symptoms and do not penetrate to their causes. By such procedure the uncultivated mind sees in all the changes of Nature reflections of its own states; the winds "howl" and the rivulets "babble," the thunder "mutters" and the planets "attract" each other. But when the mind passes from symptoms to causes, it recognises the irrationality of expecting the same effects to be produced by causes that differ. The anatomical investigation which reveals the many and profound differences between the human and animal organisms, is further emphasised by the psychological investigation which reveals the still greater differences in the Experience of men and animals, so that in spite of certain fundamental resemblances the mental states of each are specifically unlike.

93. To make observations of animals really serviceable, it is necessary that we should eliminate all the ascertainable differences, and leave standing only those conditions which animals and men have in common. This of itself is an arduous task, and when completed would need caution in application. We must not express the results in other than general terms; we must not attempt precision of statement. I mean, that if we attribute feelings to both, we must not attribute feelings of the same complexity to both. The anger of a bee or the foresight of a fox resembles the anger and foresight of a man, much as the vision

of a mollusc resembles the vision of a bird, or as the mathematical faculty of a savage who cannot count beyond five resembles that of an undergraduate who can wield the Calculus.

94. It is clear that we should never rightly understand vital phenomena were we to begin our study of Life by contemplating its simplest manifestations in the animal series; we can only understand the Amœba and the Polype by a light reflected from the study of Man. It is also clear that we shall never form even an approximate idea of the mental states of Animals until we have a theory of those of Man; and such a theory must be constructed, not out of a classification of symptoms, but out of a reduction of symptoms to their causes.

This does not seem to have been apprehended by the various eminent writers who have attempted an Animal Psychology. Their researches have been further biassed by a secret desire to establish the *identity* of animal and human nature—a desire consequent on their reaction against the irrational effort of theologians and metaphysicians to sever human nature from all *community* with animal nature. In opposition to the doctrine that animals were soulless machines, they insisted so strongly on the intelligence of animals that they overlooked the conspicuous differences in the conditions and results. They committed no such oversight in regard to Physiology. They knew that fish could not run, having no legs, and that cats could not fly, having no wings; and, to be consequent, they should have known that animals could not manifest certain psychical activities in the absence of the requisite physiological and sociological

conditions. The animal without Language is as incapable of abstraction, and of what we specially designate Intellect, as, without wings, it is incapable of flight. In a social medium which evokes sentiments and ideas, the mental organism of man acquires organs, capacities, which are impossible to the animal, and these modify the whole Experience of man. This being the case, it is difficult for us to form even an approximate estimate of the animal mind, because we must interpret it by our own wherever we have no clear vision of the conditions operating in each; and even when we can specify a difference, it is difficult to estimate the result—a notable illustration of which is the impossibility of accurately realising what is the mental result of congenital blindness or deafness.

95. The great advances which have been made, owing to the extensive studies of comparative Physiology, naturally suggested that equivalent advances might be made through studies of comparative Psychology. The anatomist having traced a community of plan in the composition of organisms, and the physiologist having traced a corresponding community of function, so that the animal series came to be viewed as a graduated differentiation of simpler into more complex forms, and the complex thus became intelligible in the light of the simpler forms, the psychologist readily concluded that since the mental functions were organic functions, they also might profitably be studied on the comparative method. All those animals that possessed a nervous system would necessarily present the sentient functions of

that system; the system in its simpler forms would present the functions in simpler forms.*

96. This idea fascinated me, as it has fascinated others. And I owe to it not a little of my scepticism respecting the classic views of the brain as the exclusive organ of feeling and intelligence; for the comparative investigation, confirmed by experiment, left no doubt that animals which had nothing to be called a brain (except by an extravagant extension of the term) did, nevertheless, manifest several of the functions classed under sensibility and even intelligence, which it was a mere evasion to call Instinct. But although comparative studies were of great service in enabling me to form a conception of the sentient mechanism, they were absolutely misleading in relation to the conditions of Experience. The fallacies of anthropomorphism were not to be escaped; and the reason of this will explain why comparative Psychology cannot be placed on the same footing as comparative Physiology. The anatomist and physiologist have the same means of investigation and verification, both when studying the animal organism and when studying the human organism. The issues and organs, the secretions and other active manifestations, are objective facts which need no subjective control or interpretation. That the muscle of a dog, a horse, a rabbit, a frog, or a

* "Se la facoltà psichica nei suoi elementi essenziali si attribuisce all' uomo exclusivamente, il regno animale si annienta, e l' uomo stesso rimane un enigma insolubile"—a just remark, but followed by this which is questionable—"se soltanto a lui ed agli animali, quello vegetale rimane un mistero ancor più inesplicabile."—TITO VIGNOLI: *Saggio di Psicologia Comparata*, 1877, p. 69. Whence his conclusion that rightly to understand the mind of man we must also investigate the mind of plants.

fish has the property of contractility; that the mucous membrane of a dog, horse, rabbit, or frog has the property of secretion; that animals move by means of contracting muscles, and digest by means of the secretions, are facts which admit of no doubt. It is quite otherwise when the psychologist compares the sentient phenomena presented by animals with those presented by man. The external appearances may be very similar, but what assurance has he that the internal feelings are similar in each? A dog fastens on a rat; the rat struggles and bites; the dog adjusts his movements to every movement of his prey, growls with fierce rage, eats and digests the flesh, rejecting the indigestible hair, claws, &c. We interpret the actions of the dog by our knowledge of similar actions in ourselves. We suppose the dog to have feelings like our own, and that these feelings prompt and accompany his movements. And our supposition is warranted by our knowledge of the great resemblance between the organs and tissues involved in these actions effected by the dog and by man. From the objective similarity of the effects we conclude a subjective similarity in the causes, and inversely from the similarity in the organic causes we conclude a similarity in the subjective feelings. So far all is clear. But now observe the polype clutching a worm or waterflea, mastering its struggles, drawing its victim into its inside, and then, having extracted its assimilable juices, rejecting the indigestible shell or skin. The actions, as objective facts, are singularly like those of the dog mastering the rat; the results are similar. Shall we then conclude that the polype felt very much as the dog felt? Shall we

here also conclude a similarity in the feelings to explain this similarity in the acts? On proceeding to verify this inference, we are forced to admit that it was precipitate. From a certain objective similarity we have inferred that the two cases were similar *throughout*. In this way a spectator observing the actions of Vaucanson's mechanical duck to be very similar to those of a living duck, would infer that, together with this agreement in mechanical conditions, there was also an agreement in the vital conditions: he would suppose that Vaucanson's duck was alive and had feelings. This inference he would rectify as soon as he learned that the movements of Vaucanson's duck were effected by springs and wheels, and not by living muscles and nerves. A knowledge of the vital conditions would enable him to see that the observed similarity was limited to the mechanical aspects of the two cases. And thus also, in the case of the polype and the dog, a knowledge of the organic conditions rectifies the inference from observation. The conditions are conspicuously different in the two cases. The structures of the dog and the polype have only the most general resemblances; their mechanisms and experiences are so unlike that it is only by a vast knowledge of details and a large theory of organic evolution that we can bring them under one general rubric. Nor does the difficulty cease here. Observe a sensitive plant, the hairs of which an insect touches: the insect is clutched, struggles vainly, is enfolded, pressed down upon the leaf, which pours forth a secretion, and the insect is digested, as the waterflea and rat were digested, the indigestible materials being rejected. Shall we here also recognise the presence

of feelings similar to the feelings in the dog and in ourselves? There are distinguished writers who attribute a soul to the plant, no less than to the animal. The hypothesis lies wholly beyond disproof, because it lies wholly beyond proof. But I would urge, that if we credit plant and polype with souls, we are bound by every consideration to deny that these souls are *like* our own, beyond that general likeness which may be detected between their organisms and our own, when both are resolved into differentiations of protoplasm. There is a theoretic advantage in assigning Sensibility to all living organisms, and thereby giving unity to our conceptions of organic phenomena; but while fully recognising this, we must not overlook the conspicuous diversities of organic phenomena, and the specific characters which result from the differentiations of Sensibility under complex conditions. Once clearly apprehend that *every phenomenon is a function of its conditions*, and you apprehend that the marked variation of the organic conditions presented by the various animal structures must produce marked dissimilarities in sentient phenomena. *A priori*, then, we are certain that a plant or a polype cannot possibly feel like a dog or a man; and although we may credit it with feeling, *what* the nature of that feeling is must remain entirely inconceivable to us.

97. Here, and indeed throughout, we have only the positive data of objective observation without the control of subjective verification. How illusory may be the subjective interpretation of animal actions is apparent in the familiar fact that even men may and do exhibit the same objective phenomena when the internal states of feeling are different—they laugh

and cry from central agitations which have nothing ludicrous or pathetic; they struggle and shriek when feeling nothing whatever of the pain which normally excites such actions. We know this is so, for they inform us that it is so, and we have ourselves experienced it. But the animal cannot tell us the feelings that underlie its manifestations; and since we have positive evidence, first, that the objective facts are not always interpretable in the same terms of feeling; secondly, that every feeling is a function of its sentient conditions, varying with these conditions, who shall venture to say what may be the precise mental state even of the highest ape? His mechanism is in many details unlike our mechanism; this of itself implies a dissimilarity in the sentient conditions the range of which we cannot estimate. But still greater is the difference between his Experience and ours; and the influence of that factor is quite incalculable.

98. On these grounds we can only assign a very subordinate place to comparative Psychology. It has its place, and furnishes objective analysis with important data; and at times affords us a clue even in subjective analysis. But it can only mislead research if its limitations are ignored, and if we unrestrainedly interpret animal actions in the light of human consciousness. The psychology of animals may be simpler than that of man, but it is assuredly less intelligible. Now the effective procedure of investigation is not that of passing from the simple phenomena to the complex, but from the more easily accessible to the less easily accessible,—from the better known to the less known. This principle

determines the selection of the physiological investigation of the Mechanism, in cases where the phenomena are more easily accessible and the inductions more easily verifiable, than through the analysis of Experience; and *vice versa*.

Our Method is, therefore, *pari passu*, objective and subjective. Animal Psychology offers a vast field for experiment and verification; it is rich in suggestion respecting the Functions, though of little value respecting the Faculties; it presents us with certain analyses, so to speak, made without disturbance of the organism; but, assign what value to it we may, it cannot take precedence of Human Psychology, nor can its facts be intelligible until seen in the light reflected from the human mind.

DIFFERENCES OF ANIMAL AND HUMAN.

99. The great Aristotle studied animal life with a keen appreciation of the fundamental community and specific diversity between men and animals. Subsequently, theological dogmas arrested this line of inquiry, and metaphysical dogmas consolidated the prejudice. Descartes threw his great authority into the scale, and started the idea that animals were sentient machines without intelligence, because without souls. In spirit and in conception this celebrated explanation of the animal phenomena was vicious, but it seized one true and important aspect in recognising the operation of mechanical principles, and another in roughly marking the broad distinction between animal and human. Descartes fully admitted, what his successors quickly forgot, and what

his adversaries rarely appreciated, that the animal mechanism was a sentient mechanism. This at once disposes of the absurd interpretation that animals are machines, and, therefore, cannot feel. Although not verifiable, the opinion is tenable that animals, if sentient, have little or no consciousness of their sentience. I mean, that their actions may have a sentient mechanism, and yet never evolve the secondary states of reflected sentience. It is necessary that the animal should perceive objects: it is not necessary that he should perceive his own perceptions as objects. To hear a sound is to have a sensation; to attend to its concomitant external object is to perceive that object; but to attend to the mental state of sound, or to the operation of perception, is another and more complicated process. We have no evidence that animals are capable of this; and if we restrict Consciousness to such cases, we must deny consciousness to animals.

The Jesuits Bonjean and Darmanson took up the idea of Descartes in its most irrational aspect. The former declared that all the animal manifestations which looked like the operation of a spirit were in truth the operation of Satan; the latter (*La Bête Transformée en Machine*, 1684) urged this dilemma: If animals have feelings and passions, there is no God; and if the animal has a soul, it is mortal, and our soul is mortal (CARUS: *Vergleichende Psychologie*, 1866, p. 20).

100. It was not until the middle of the last century that an earnest voice was raised in vindication of the animal claims. The speaker was Reimarus, the friend of Lessing. His work is still worth consulting, though

it is more concerned with the instincts than with the higher phenomena. At the same epoch, Georges Leroy wrote an agreeable little book, enriched by the personal experience of a sportsman. Frédéric Cuvier followed in 1825 ; and in 1840 Scheitlin attempted a complete survey. Recently we have had the valuable observations and collections of Houzeau, Brehm, and the great Darwin.* All these works are open to the objections urged in §§ 96 and 97. I shall, however, here confine my remarks to the last, and endeavour in a running commentary to bring out the distinctive position of Human Psychology.

101. No reader will suppose that in giving prominence to the distinctively human phenomena I mean to deny or underrate the community which exists between men and animals. On the principles of Evolution, we expect to find well-marked differences and serial gradations. When we are tracing the serial development, or taking a general survey of organic phenomena, our attention is mainly fixed on the resemblances; when we are classifying and describing, our attention is mainly occupied by the diversities. For Mr. Darwin's purpose it was needful that he should emphasise the position that "there is no fundamental difference between man and the higher animals in their mental faculties" (p. 35). For our purpose it is needful to point out that, while there is no

* Reimarus: *Allgemeine Betrachtungen über die Triebe der Thiere*, 1760. Georges Leroy: *Lettres Philosophiques sur l'Intelligence et la Perfectibilité des Animaux*, 1762. (It has been translated by Mrs. Richard Congreve.) Scheitlin: *Versuch einer vollständigen Thierseelenkunde*, 2 vols., 1840. Houzeau: *Études sur les Facultés mentales des Animaux*, 2 vols., 1872. Brehm: *Das Thierleben*, last edition, 1877. Darwin: *The Descent of Man*.

fundamental difference in the *functions* of the two, there is a manifest and fundamental difference in the evolved *faculties* (according to the definitions of § 16): men exhibiting some faculties of which animals have not apparently even the rudiment. When Comte affirms that there is nothing in Humanity, the germs of which are absent from Animality, the assertion requires qualification. Animals may be said to have the germs of our moral and intellectual life in somewhat the same sense as serpents have the rudiments of our limbs. If the biologist recognises the many points of community in animal structures, the zootomist has to insist on the points of diversity; and he will not admit that because limbs are vertebral appendages, therefore limbs exist wherever a vertebral column exists. If the psychologist recognises in all animals the fundamental facts of Sensibility, he must still doubt whether all animals manifest the same modes of Sensibility; and on this ground he must qualify the statement that because man possesses the same senses as the lower animals his fundamental intuitions must be the same: qualify it to the extent that, in the first place, the senses are not the *same*, but only more or less *similar;* in the next place, that we have no accurate means of ascertaining the degree of similarity; and finally, that the intuitions are to be referred to the Sensorium, not to the sense organs. By way of example, consider the organs of scent in man, wolf, and dog. They are constructed on the same type, and are very similar in detail. Yet we know that the wolf and dog are sensitive to impressions inappreciable by man, and are utterly indifferent to fragrancies which powerfully affect man. To these

animals the external world seems a continuum of scents, as to man it is a continuum of sights. They track their invisible prey by scent as we by sight. They smell, as we see, the approaching or receding prey. Sensations of smell have, therefore, a different influence on their Sensorium, a different significance. Pass now to the organ of sight. As an optical apparatus it is very similar in dog and man; but the optical experiences of the two are so unlike, that it is eminently doubtful whether the dog has any equivalent of the sensation of colours, over and above their degrees of luminosity. This conclusion is made probable by the evidence we have that even in man the fine distinction of colours is a developed product. Animals distinguish coloured objects by distinctions of luminous impression, but it has yet to be proved that they distinguish colours. All the observations of naturalists respecting birds and insects being attracted by colours demand reinvestigation. The facts may be explained sometimes by differences in the luminosity of the objects and sometimes by the odours of the pigments.*

* There seems good evidence that some men born blind have been able to distinguish coloured objects by scent (GOETHE: *Gesch. d. Farbenlehre*, W. xxxix. p. 355), and other men by touch. It is also certain that Daltonians, who fail to distinguish scarlet from green, yet do not confound objects thus coloured. How birds and insects discern objects we do not know. Since this was written, a correspondent in *Nature*, Oct. 18, 1877, p. 522, has recorded observations showing that it is the scent and not the colour of plants which attracts insects. "A bee settling on a scarlet geranium will not go from it to another species or variety, but gives its attention to this particular variety only, irrespective of colour, whether scarlet, pink, or white, never going from a scarlet geranium to another scarlet flower, even if in contact." Other correspondents questioned this; but I think they only showed that insects could detect different degrees of brightness. The subject is very obscure. It has been treated by SIR JOHN LUBBOCK (*Linnæan Society's*

102. Without pushing this consideration further, we may say, that granting a much closer resemblance between the organs and functions of animals and men than is demonstrable, we should still have to allow for the conspicuous differences. And were the connate Mechanisms identical, there would still remain the immense diversity in the Experiences of the two; and it is these which determine the faculties of the functions, and to a great extent the *quality* of the feelings. Comte instructively observes that the mental inferiority of animals has been much exaggerated for want of distinguishing sufficiently between individual capacities and social results. In descending the series of organisms, we find the Experience and the Mechanism becoming simpler and simpler, having smaller range and less development, till, on reaching the lower stages, we come upon organisms to which the hypothesis of their being sentient machines is not inapplicable. Moved only by the immediate stimuli, and moved always in the same way, they are incapable of what we know as Experience: they feel and they react; they never learn through feeling to modify their reaction and to anticipate a future result. Observe a snail, how perfectly its reactions resemble those of a machine. Then pass upwards to the fish. A fish feels the hook, and darts away, but, having released itself from the irritation, returns again and

Journal, vols. xii. and xiii.) with his accustomed patience and ingenuity; but his observations no more prove that insects have the sensation of *colour* than similar observations prove insects to have the sensation of *sound* because they react on the stimulus of vibrations which to us are heard as sounds. Insects cannot have sensations of sound *like* those in us produced by vibrations: they have not an auditory organ, much less the Sensorium of man.

again to the bait, undeterred by any memory of past feeling and a torn mouth. How different a dog! If he has been hurt in an attempt to gratify some desire, he approaches the object with caution, perhaps restrains his desire altogether by the fear of the recurrence of pain. The dog learns. The fish is incapable of learning. Applied to fishes and animals of a lower organisation, there is a certain truth in what Buffon, following Descartes, says of all animals: "L'animal est un être purement matériel, qui ne pense ni ne réfléchit, et qui cependant agit et semble se déterminer." The error begins when he adds: "Nous ne pouvons pas douter que le principe de la détermination ne soit dans l'animal un effet purement mécanique et absolument dépendant de son organisation." Absolutely dependent on organisation indeed, but *therefore* not purely mechanical, since the organisation is not purely mechanical; and in so far as actions are dependent on organisation, the actions of animals are not of another order than those of man. The point of departure is the Experience which arises with a more complex organisation.

103. One important consequence of this more complex Experience is the evolution of that principle of Reflection, generally called Consciousness, that Inner Sense which Kant marks as the distinguishing attribute of man when it makes its own affections objects of thought (Werke, i. 17). In how far animals participate in this power of reflecting on what passes in themselves, reflecting on their own operations and distinguishing the objective and subjective aspects of the same, it is impossible to say; but the probabilities are all against their having more than the faintest

rudiments of such experiences. And every psychologist must be alive to the immense influence of the power of Reflection, and the separation of Self from Not-self, of objects from feelings.

104. Insistance on the manifold points of diversity need not blind us to the manifold points of community. Animals and men are alike, though different, in structure; they are alike, though different, in functions. The senses, instincts, primary aptitudes are similar. The nutritive organs, the reproductive organs, the sense organs, and the motor organs are similar; from whence it is rational to conclude a corresponding similarity in functions. That animals feel, and combine their feelings according to laws fundamentally the same as those which operate in man, is scarcely to be gainsaid; but not less certainly their feelings and the results of their combinations of feelings are more or less different. They cannot have precisely the same intuitions if the sensible elements of such intuitions are dissimilar. If animals have Logic, it is never the Logic of Signs, which condense ideas in symbols; it operates on materials of an Experience which is special to each organism, and is far more restricted in its range than that of man. Animals have egoistic impulses; they have scarcely any sympathetic altruistic impulses beyond the sexual and parental. They manifest a certain tenderness towards young and small animals (probably a derivation of the parental instinct), but this tenderness vanishes in the presence of any egoistic impulse. Mr. Darwin refers to Brehm's female baboon, whose heart was so capacious that she not only adopted young monkeys, but even stole young

dogs and cats, which she continually carried about. Her kindness, however, did not go so far as to share her food with her adopted offspring, at which Brehm was surprised, as his monkeys always divided everything quite fairly with their own young ones. Here we see how the egoistic impulses dominate. In the human mother we should find altruism raising the maternal instinct into a maternal sentiment, through the intellectual appreciation of the claims of the helpless—her adopted child would be fed before herself. Again, this baboon was one day scratched by an adopted kitten. "Greatly astonished, she examined the kitten's feet, and without more ado bit off the claws." This shows intelligence; but it is not an intelligence which, profiting by experience, knows that the kitten's claws are useful to the kitten, and that she could be taught not to scratch her adopted mother with them. Language, which condenses the experience of others, and communicates results to those who have not personally experienced them, was denied to the baboon; she could only learn from her own experience, which was simply of the scratching action of claws.

105. The animal tends its sick offspring; the savage mother tries to cure her sick child; the civilised man devotes laborious days to succour any one that is sick, tending the wounded soldier of an alien race, and passionately seeking for methods of cure that may be applied to all suffering. The law of animal action is Individualism; its motto is "Each for himself against all." The ideal of human action is Altruism; its motto is "Each *with* others, all for each." "To succour those who suffer," said Turgot,

"is the duty of all and the business of all." But in enumerating the various splendours of Social Life we must not overlook its dark shadows. The animal's ignorance is at least free from the curse of superstition; his happiness is not marred by the multitude of misleading ideas which pervert man. The animal's selfishness is at least free from the perversions of vanity, and from the vices with which aberrant imagination has degraded the passions of men. Human history on its darker side is a frightful succession of cruelties and debaucheries, such as find no parallel in the history of animals. It is true that animals have no virtues; for Virtue is the suppression of our egoistic impulses to promote the welfare of others; and animals are incapable of this conception. Their instincts lead directly to actions, never to ideas. Hence, while they share with man the sexual instinct, they know nothing of Love. On the other hand, while animals suffer the contagion of Disease and the contagion of Fear, man alone suffers the contagion of Folly; for him error is as catching as a disease. Lest this should read like an unworthy sarcasm on human nature, I will add: Man alone knows the contagion of Enthusiasm, of Glory, of Virtue. If the animal is less miserable because untormented by the unresting search for happiness and ideal life, and unterrified by superstitions, he is also less enviable, because untouched by spiritual desires—

> "For who would lose,
> Though full of pain, this intellectual being,
> These thoughts which wander through eternity?"

106. The objection may perhaps be urged that in the foregoing remarks man is represented in his

developed state, after centuries of culture have modified his organism, not in the primitive nor even in the savage state, and in so far the comparison with the animal is unjust. But my object was to make prominent the effect of the social factor, and to take man in his developed state as the peculiar exemplar of its power. The distinguishing character of Human Psychology is, that to the three great factors Organism, External Medium, and Heredity, which it has in common with Animal Psychology, it adds a fourth, namely, relation to a Social Medium, with its product, the General Mind (see next chapter). Even in confining our comparative survey to the human race, we see evidence enough how supremely important is this social medium. The configuration of the savage and all his functions are indistinguishable from those of the civilised man. The marked diversities between the mental phenomena of the two result from the more complex social relations and the consequent enlargement of Experience. Note, further, that the historical evidence of the evolution of sentiments and faculties disproves both the metaphysical doctrine of innate sentiments and ideas, and the phrenological doctrine of sentiments and faculties having their organs in cerebral configurations.

107. Although it is to Experience that Knowledge must be referred, the Experience which has within it the means of continuous evolution owes this to Language, a faculty no brute has acquired. By it experiences are registered, generalised, compared, and condensed in formulas which serve for intellectual money. By it the personal relations are raised into impersonal conceptions: the moral life becomes the

social life. The animal, as I formerly said, has sympathy and is moved by sympathetic impulses, but these are never altruistic; the ends consciously sought are never remote ends. Our moral life is feeling for others, working for others, quite irrespective of any personal good beyond the satisfaction of this social impulse. Enlightened by the intuition of our common weakness, we share ideally the universal sorrows. Enjoyment, more and more expanded with the possibilities of interchange, becomes another name for communion.

108. By gaining some insight into the operation of the social factor through the instrumentality of Language we are enabled to state approximately what mental phenomena can *not* be found in animals. But, owing to the interfusion of this with the other factors, and the modifications of Feelings which result, the mere abstracting of the social medium does not leave us standing face to face with the animal Feeling. If it enables us to affirm what feelings the animals cannot have, it does not enable us to understand how far those which they have resemble our own; and this inability is very sensible in the case of emotions of the complex order. "All animals feel *wonder*," says Mr. Darwin, "and many exhibit *curiosity*." How far the feelings so named are like our own is not clear. We observe the attention of animals fixed on certain events, and we observe them agitated by certain impressions. Brehm and Mr. Darwin record how "monkeys, moved by their dread of snakes, could not resist lifting up the lid of the box in which the snakes were, and peeping at their enemies." This is so like the action of children, and monkeys have organ-

isms so like those of children, that we must infer a certain community in their mental states. Again, that animals reason — that is to say, combine experiences, form judgments, inferences—is now seldom disputed by competent observers. "It is a significant fact that the more the habits of any particular animal are studied by a naturalist, the more he attributes to reason and the less to unlearnt instincts." Reugger gives two good illustrations: When first he offered his monkeys eggs, they smashed them, and thus lost much of the contents; afterwards, they gently hit one end against some hard body, and picked off the bits of shell with their fingers. Lumps of sugar were often given them wrapped up in paper; and he sometimes put a live wasp in the paper, so that hastily unfolding it, they got stung; after this had once happened, they always first held the packet to their ears to detect any movement within. In these examples there is the manifest result of experience; but many of the lower animals—say, reptiles and fishes—would continue all their lives unmodified by such loss of food and such pain in its acquisition. I have seen a monkey to whom a nut was given, failing to crack it with his teeth, return it to the giver. If this was not reasoning, one knows not what deserves the name. Yet, although the logical process in this case is identical with the logical process manifest in the highest reaches of reason, it is distinguishable as the Logic of Feeling, not the Logic of Signs. In comparing the possibilities of the ape with those of mankind, we must remember that in the idea "ape" are to be included all the circumstances of ape-life, under which we may be as calmly assured as Sydney Smith said

he was, that the blue-faced baboon will never become our rival in Philosophy, Science, and the Arts. The vision of man's achievement, say, in the exploration and theory of the heavens, in the conception of chemical proportions, in the interpretation of ancient records and strict calculation of remote phenomena, and in the wondrous ideal web of religion and poetry that has wrought into one grand emotional force the ages past, present, and to come—all this, side by side with the image of the highest baboon-life, presents an incongruity preposterous enough to justify the scorn with which comprehensive minds have turned away from the hypothesis which seeks for an explanation of human Intellect in the functions of the organism common to man and animals, without the addition of some other agency.

109. It is this other agency which the psychologist has to detect. Mr. Darwin, resuming his remarks, says: "It has, I think, now been shown that man and the higher animals have some few instincts in common. All have the same senses, intuitions, and sensations"—(for *same* read *similar*)—"similar passions, affections, emotions, even the more complex ones: they feel wonder and curiosity; they possess the same faculties of imitation, attention, memory, imagination, and reason, though in very different degrees. Nevertheless, many authors have insisted that man is separated through his mental faculties by an impassable barrier from all the lower animals" (p. 48).

With these authors I agree. I hold, indeed, that the mental *faculties* of man are developed out of mental *functions* which animals share with man; but

these faculties, when developed, constitute as broad a line of demarcation, a barrier as impassable, as that between the vertebrate and invertebrate structure. The moral and higher intellectual faculties of man can no more be explained by reference to the animal functions alone than the flight of birds can be explained by the creeping of reptiles, though both are reducible to mechanical and physiological principles. Just as birds have wings, man has Language. The wings give the bird its peculiar aptitude for aerial locomotion. Language enables man's intelligence and passions to acquire their peculiar characters of Intellect and Sentiment. And Language is a social product of a quite peculiar kind. It does not depend on the structure of the vocal organs alone, for some birds can articulate and imitate even our words; but no bird uses such articulations as expressions of ideas. It does not depend on the existence of a society, for bees and ants live in societies; and many animals live together in groups. In the so-called animal societies, there is apparently nothing beyond an aggregation of individuals, with some division of employments; there is no subordination nor co-ordination—only co-operation; no powers invested in individuals and classes; no command and obedience; no relinquishment of personal claims; above all, they have developed nothing like the Family as the social unit, and Tradition as the social experience. "The mental powers in some early progenitor of man must," Mr. Darwin remarks, "have been more highly developed than in any existing ape, before even the most imperfect form of speech could have come into use; but we may confidently believe that the con-

tinued use and advancement of this power would have reacted on the mind by enabling it and encouraging it to carry on long trains of thought." Yet why should the ape *desire* to carry on long trains of thought? Here lies the problem. As a matter of organisation, the man happens to have a development of the articulating faculty which is denied to the ape, who has less than the magpie or parrot, though he is more intelligent. And as a matter of function merely, the articulation of the savage is equal to that of the philosopher; yet the savage has by no means so great an intellectual and moral superiority over the ape as the highly cultured modern has over the savage. It is in the action and reaction of the social medium on the organism that we must seek the causes of this superiority.

THE MORAL SENSE.

110. What is conspicuous in the case of Intellect may also be discerned in Conscience. Both are social products. The hereditary transmission of organised tendencies, together with the distinction between functions and faculties, enables us to reconcile the *à priori* intuitional with the experiential theory. If we admit the intelligence of animals to be a rudimentary intellect, we may admit the emotions of animals to be a rudimentary moral sense. In the self-repressing effort induced by the sexual and parental instincts in birds and intelligent mammals, and in their capability of attachment apart from the direct physical link, we may recognise the same germs as those which in man the social life has developed

into devoted affection, passionate sympathy, and self-denying forethought.

111. We train our domestic animals, as we train our children, to do this and avoid that, by expressions of approbation and disapprobation, which represent caresses and blows; and so far we find them impressible and educable by the moral instrumentality which, in its gradual action on men, has incorporated itself as custom, law, and public opinion. But if we take the term Moral Sense to mean the power of discerning right and wrong, this is as impossible to an animal as the power of discerning arithmetical proportions, though here, too, the animal may show a rudimentary power in the regulation of its action by feelings of difference, "as if" it counted. Even in man this moral sense cannot properly be said to be connate otherwise than as a musical sense is connate: it no more brings with it conceptions of *what* is right, *what* wrong, than the musical aptitude brings with it a symphony of Beethoven. What it carries are certain organised predispositions that spontaneously or docilely issue in the beneficent forms of action which the experience of society has classed as right. But in the less endowed specimens of our race, even within the reach of culture, the response to the moral demands of society, whether in the shape of doctrine or of institutions, is little more than the conflict of opposing appetites, the check imposed by egoistic dread on egoistic desire. It is a great progress beyond this brute dread of the stick when the love of approbation attains the ideal force which renders social rule or custom and the respect of fellow-men an habitually felt restraint and guidance. Even within this limit

we see the human sentience attaining a mark utterly beyond the reach of our most intelligent inarticulate companion, the dog. But the moral dispositions of men have manifold roots, and a great deal of "right" action is sure to be done by very simple beings from healthy impulse, under the guidance of fact, without the idea of an uplifted rod; just as all over the world men have fed themselves on life-sustaining aliment and not on poison, and have devised suitable implements of labour. And it is to this primitive feeling and gradual varied discernment of what is congruous with well-being, what in the ancient phrase is "according to nature," that we must refer the beginning of those social rules to which approbation and disapprobation, law and its sanctions, are limbs or appendices. It is true that, from the first, superstition mingles its monstrous misguidance with the trustworthy teachings of perception and practice, and the growing mental and active range gives room not only for the expansion of real and ideal good, but also for the perversions of vanity, the love of domination, and all forms of selfish greed; so that the social rule or public opinion of every age, and even in the most civilised communities, has given its potent smile and frown to orders of action so mixed that what somewhere or at some time has been enforced as "right," has elsewhere or at another time been held abhorrent. And this observation leads us to the striking antithesis presented in the progress of mankind; namely, that the Moral Sense, which, in the first instance, was moulded under the influence of an external approbation and disapprobation, comes at last, in the select members of a given generation, to incorporate itself as

protest and resistance, as the renunciation of immediate sympathy for the sake of a foreseen general good, as moral defiance of material force, and every form of martyrdom.

111ª. It is at this point that we may fitly look backward and see how short a way the consideration of animal life alone will take us in the appreciation of the moral life of mankind, which is wrought out of innumerable closely interwoven threads of feeling and knowing. Nevertheless, such reduction of the sympathetic or moral life to its primary manifestations is not merely useful, it is indispensable to a true analysis and natural history of morals. Without it a wise estimate of the parts played by impulse, cognition, and habit, in determining human conduct, is hardly possible. In the pointer dog we observe the effect of trained impulse; a native tendency restrained and fashioned to a specific variety of action by external influence or the presentation of motive. The same order of elements developed under human conditions issues in a Regulative Intuition—a Moral Sense which is a discrimination of right conduct associated with a more or less direct disposition to accordant practice. The proportions in which conscious judgment and immediate impulse are thus combined vary so widely in the long result of inheritance and training that we have, on the one side, an immediate outleap of heroic generosity or self-condemnatory justice as a sort of moral reflex, and on the other a dire struggle between discerned duty, or the altruistic estimate of consequences, and the strong promptings of egoistic desire. It is only by duly estimating this necessary co-operation of the impulsive and the perceptive, the emotional

and the intellectual in the development of morality, that we can understand the aberrations of human teaching and practice, or the reactions of beneficent sympathy which in the history of communities are seen to defy and correct them.

112. The abstractions Right and Wrong become, in the course of social education, a centre round which emotions immediately group themselves, as quickly as steel filings round a magnet: they are the signal for an attitude of preparation without any conception of specific acts to which they summon. And, again, in a lower order of minds, they never acquire any efficient significance other than "what is approved and what disapproved," "what is punished and what rewarded." Hence we see the members even of civilised communities determined by what is called religious or moral teaching as variously as the habits of different orders of animals are determined. "If," says Mr. Darwin, "to take an extreme case, men were reared under precisely the same conditions as hive-bees, there could hardly be a doubt that our unmarried females would, like the worker-bees, think it a sacred duty to kill their brothers, and mothers would strive to kill their fertile daughters, and no one would think of interfering" (p. 73). To make the comparison luminous, we must shade our eyes from the impossibility of human organisms being subjected to precisely the same conditions as hive-bees. And we need not look beyond the human sphere to see the preposterous and maleficent courses which may be taught and practised under the form of Right, either as an expression of Divine Will, or as a means of securing some ultimate deliverance from evil. But dominating

all other influences has been the Social Sanction, the approbation or disapprobation through which the opinion of society penetrates the life of its members, from the hearth to the court of justice, from the game of chance with which they amuse their idleness to the field of battle where they face death. A glance at any social state will show the triumph of this force when it comes into collision even with consecrated beliefs, spiritual terrors, and care for the loving and beloved. Take the case of duelling. A man might see clearly enough that the practice was, in point of utility, absurd, was attended with cruel consequences, and was a direct violation of his religious principles; but the immediate terror of social contempt for what was branded as cowardice overpowered the fear of death and of the Divine wrath, the pleadings of the family and the thunders of the Church. The one power that has succeeded in suppressing it is the reversal of the social disapprobation. "If the force of custom simple and separate be great," says Bacon, "the force of custom copulate, and conjoined, and collegiate is far greater; for then example teacheth, company comforteth, emulation quickeneth, glory raiseth."

Here we see the differences that may be covered by an identity of names, though the identity may be significant of a true kindred. We may say that we educate our dogs in a medium of approbation and disapprobation, and we may give the same name to that blending of coercion and sympathy which has educated man to produce poems that thrill the life of successive ages, and science that embraces more and

more of the invisible and brings it within the range of demonstration.

The progressive changes underlying the term "moral" may be illustrated by the conception of Remorse. A dog running away and hiding himself after a conscious misdemeanour, and not to be brought back by coaxing, having more fear of the stick than belief in forgiveness, is not a very inadequate comparison for that stage of human remorse which consists in the misdoer's mere terror of the vengeance he has incurred from supernal powers. To the moral sense in this lower stage there is but a faint and confused impression of what constitutes the wrong or wrongdoing; forgiveness is contemplated as a heal-all. But in a mind where the educated tracing of hurtful consequences to others is associated with a sympathetic imagination of their suffering, Remorse has no relation to an external source of punishment for the wrong committed: it is the agonised sense, the contrite contemplation, of the wound inflicted on another. Wordsworth has depicted a remorse of this kind—

> "Feebly must they have felt
> Who, in old time, attired with snakes and whips
> The vengeful Furies. Beautiful regards
> Were turned on me—the face of her I loved;
> The wife and mother, pitifully fixing
> Tender reproaches, insupportable!"

The sanction which was once the outside whip has become the inward sympathetic pang.

113. But in the intermediate stages also, which are more comparable to the manifestations of animals, at the same time that the dread is directed to an

external vengeance of gods or men, we see the moral education of our race proceeding, in the more and more rational classification of actions as right or wrong, towards the final identification of the Divine Will with the highest ascertainable duty to mankind, and in the continual elevation of public opinion towards the highest mark of Feeling informed by Knowledge.

The different strands of human experience which combine to create moral sentiment act in various proportion on individual minds, and hence it happens that some formulas of ideal motive which have an intense reality for one mind have little force for another, though the moral level may be in both cases equally high. Kant's fine phrase—"Man refuses to violate in his own person the dignity of humanity"—may represent an abiding efficient response in the consciousness of a given person, the moral keynote, as we may say, to which his other sentiments are adjusted. His discernment and choice of the Right are braced by an intense scorn of the Wrong, which he habitually represents to himself in its wider relations.

114. Thus while man, in his moral beginnings, has a marked kinship with the animals, whose life, like his own, is regulated by desires and intelligence, he stands apart in the attainment of moral conceptions and of organised ethical tendencies, which are correctly called moral intuitions. These latter form a justification for the *à priori* intuitional doctrine; but its explanation lies in the principles of experience. We have intuitions of Right and Wrong in so far as we have intuitions of certain consequences; but these

must have been learned in our own experience or transmitted from the experience of others. Some writers who are disposed to exaggerate the action of Heredity believe that certain specific experiences of social utility in the race become organised in descendants, and are thus transmitted as instincts. With the demonstrated wonders of heredity before us, it is rash to fix limits to the specific determinations it may include; but the evidence in this direction is obscured by the indubitable transmission through language and other social institutions.

HISTORY.

114. We need not prolong this survey of the differences between Animal and Human Psychology: its outcome is, that although the observation of animals may yield us valuable material, it must be used with great circumspection, and only as suggestion for experimental analysis, never as premisses for conclusions reaching beyond. The objective data of Psychology are furnished by Zoology and History; the laws by Physiology and Sociology. Observation will not suffice. Introspection will not suffice. Analysis and Verification by Synthesis are necessary. Experiment is necessary. Disease has been happily termed an "Experiment instituted by nature," since the disturbance of one organ by exaggerating or diminishing its action renders more conspicuous the part that organ plays in the general activity. We may also term History an experiment instituted by Society, since it presents conspicuous variations of mental reactions under varying social conditions, and exhibits on a large

scale the evolution of sentience and conceptions from germs of emotional and intellectual experiences. History unrolls the palimpsest of mental evolution. Under the conspicuous characters of Science and Conscience may be read the fainter characters of more primitive states; under Sentiments, the primitive Affections; under Morality, the social needs transforming primitive personal desires into impersonal aims, so that the stranger is no longer an enemy (*hostis*), but a fellow-worker and fellow-sufferer. History shows how individual experiences become general possessions, and individual labours become wealth; how facts become Science, and industries Commerce. The shifting panorama of History presents a continuous evolution, a fuller and more luminous tradition, an intenser consciousness of a wider life.

115. Because Psychology is interpreted through Sociology, and Experience acquires its development mainly through social influences, we must always take History into account. It shares with Society the distinctive character of progress. It is for ever germinating, for ever evolving. The physiologist recognises the same organs and functions in the savage and the civilized, in Greek, Hindoo, old German, or modern European; but not the same thoughts and sentiments. The brain of a cultivated Englishman of our day, compared with the brain of a Greek of the age of Pericles, would not present any appreciable differences, yet the differences between the moral and intellectual activities of the two would be many and vast. These are not to be assigned to the organism and its functions. The co-ordination of sensory processes in the brain of the Greek was doubtless as

perfect as that in the brain of the Englishman; but the quality of the moral feelings and the range of conceptions, so far as we could test them objectively, would be very different. The Englishman has been nourished on the products of the centuries; his feelings and thoughts have taken form under conditions unknown to the Greek, so that what would have delighted the one is anguish to the other. The sight of a wounded foreigner, which agitates the Englishman, and prompts him by its very imagination to undertake hardships and danger in the effort to relieve the sufferer, would have excited no more emotion in a Greek than the sight of an injured dog. A proposition to send money, food, clothing, and medical aid to the relief of the wounded Cretans would have made the Agora ring with shouts of derisive laughter. And a treatise on algebra which is mastered by a schoolboy would have been like a wizard's scroll to Pythagoras or Hipparchus. Aristotle, with all his knowledge and aptitudes, would be as a child in Liebig's laboratory. So great has been the evolution of moral sentiments and scientific conceptions.

Thus, while the laws of the sentient functions must be studied in Physiology, the laws of the sentient faculties, especially the moral and intellectual faculties, must be studied in History. The true logic of Science is only made apparent in the history of Science. If we follow the development of thought on the large scale of History, we see how the mind acquires new powers and possibilities with new conceptions. We see also how it passes from particular concrete facts to general facts and abstractions; we see it descending from the heights of abstraction to

the discovery of particulars. In other words, we observe a natural mode of mental operation, to which we affix the term Induction, and another mode to which we affix the term Deduction. These formulated, we have entered on the eternal possession of two logical laws. Had we not the historical evidence assuring us that these laws were unsuspected for thousands of years, although, of course, in operation from the earliest ages, we should imagine them to have been familiar to every reflecting mind. And so with other mental laws. History discloses how the mind passes from wonderment at the miraculous to the discernment of order, from sorcery to science (a passage formulated by Comte as the law of the three stages), how the mind begins with a vague conception of universal Animism, or the presence of a separate Will in each object, with consequent belief in the capriciousness of events, leaving the imagination free to picture the past and the future in any combinations it pleases; how this belief gradually becomes troubled by doubts, as experience presses on man the conviction that events are causally and not casually determined, till at length the law of Causality is conceived, and the order of events is recognised as inexorable. Henceforth familiarity with exact descriptions and demonstrations creates a habit of mind which renders miracles inconceivable, and caprice in the succession of events absurd. All our experiences and all our explanations are now dominated by a steady faith in a fixed order, and our efforts are directed towards the ascertainment of what that order is. To the mind thus organised, the fluctuating belief in accident and caprice, which our ancestors held, is as the babble of infants.

Not only in Science is the march of mind thus conspicuously illustrated: a similar evolution may be traced in Art. New sensibilities are developed, and Nature is full of new symbols. There are harmonies, both rhythmic and moral, in the poetry of Goethe and Wordsworth, which would have been discords and dark riddles to Sophocles or to Dante. A fugue by Bach, or a symphony by Beethoven, would have been little better than a noisy chaos to Pericles. In the developments of Industry and the Mechanical Arts, the mind has acquired not only new powers, but the equivalents of new senses.

If it is evident that the individual mind has been in constant evolution, still more evident is the fact that the *general* mind, or what we call the "culture of the age," is an historical growth. "Before our eyes a world of reason is slowly constituting itself in the history of culture; and we who live now enter upon the inheritance which past ages have laid up for us. There is, however, a fundamental difference between the way in which these results look to us now and the way in which they originally organised themselves. The child who begins to learn a language finds the members of it all, as it were, upon one level: adjectives, adverbs, prepositions, and verbs confront him with the same authority and rank. This appearance is deceptive; it may easily suggest that the words are not members in an organism in and out of which they have developed. We can go back to a point when there was little or no distinction between elements; when language was narrower in its range, and not, as now, developed, into an endless host of

points. The same allusion has to be overcome in the case of thought." *

116. Thus the psychologist must include Psychogeny in his investigations, as the physiologist includes Embryogeny. History shows how the human mind, which, at the dawn of civilisation, was a lyre of three chords, became in the progress of civilisation a lyre of seven chords; and by consequence the pretension of the Introspective Method is inadmissible as regards the genesis of mind. But we need not therefore accept Mr. Green's verdict that "the observation by the mind of its own genesis is the crowning absurdity of speculation; for there is nothing to observe unless the observer puts his own developed consciousness in the place of the undeveloped consciousness he is observing." † The difficulty here suggested applies only to the Introspective Method. Objective analysis will enable the psychologist to observe the evolutions of mind, as it enables the physiologist to observe the evolutions of the embryo. The one carries with him the standard of a developed consciousness, to which all the observed stages tend, as the other carries with him the standard of an adult organism to which all the prior stages tend. Objective analysis further furnishes us with an answer to the difficulty which many regard as insuperable, namely, that mind cannot be explained as a function of the material organism, because "to go beyond the intelligence to explain the intelligence is to cut away the ground on which we ourselves are standing." To this

* WALLACE: *The Logic of Hegel*, 1874, p. lxxxiv.
† GREEN: *Introduction to Hume*, § 9, as cited by CAIRD, *op. cit.*

the answer is: that the mind *can* be explained as a function of the material organism is proved by the fact that it *is* so explained; and the objection urged against such explanation would equally apply to all theories of cosmical phenomena, since we can only know these through subjective states, only express them in terms of Feeling. We observe Life as a function of the organism, varying with all the variations of the organism; and, having this clear conception of the function, we are at ease respecting any of its unknown quantities. So with mind. We observe it as a function, and we observe its variations under varying social conditions. Having thus a clear conception of the organism and of social influences, we have all the requisite data for an explanation of its development, in the only sense according to which explanation is accessible to us.

CHAPTER IX.

THE GENERAL MIND.

117. THE remarks which closed the preceding chapter prepare the consideration of a factor, which, although always implied in theoretic discussion of psychological questions, is rarely conceived with distinctness. I allude to the experience of the race in its influence on the experience of the individual; that is to say, the direction impressed by the General Mind on the feelings and opinions of particular minds. This influence is implied in the familiar use of such terms as *the* Mind, Common Sense, Collective Consciousness, Thought (*Das Denken*), Reason, Spirit of the Age, &c. Obviously these terms indicate something over and above the individual mind, transcending its limitations and correcting its infirmities. Obviously also the existence of such a factor calls upon something beyond Introspection, since we cannot pretend by Introspection to a direct observation of phenomena which lie outside our individual experience.

The object of search is *the* human mind, not *a* mind. Psychology has to explain not my thought nor yours, not my modes of reaction nor yours, except in so far as these are exemplifications of the normal reactions of an ideal mind. Science formulates general laws and abstract conceptions; not particular facts and

idiosyncrasies. From the fleeting changes of the individual it extricates a group of characters which these changes have in common; from the multitudinous diversities of individual organisms it extricates a group of characters common to all. It finds the sentient organism reacting differently in infancy, in maturity, and in old age; differently from year to year, day to day, hour to hour. But amid these changes there are characters which do not change; and the total of these is condensed in the abstract conception, Mind.

118. The combination of the individual and the general leads to this result. While the mental functions are functions of the individual organism, the product, Mind, is more than an individual product. Like its great instrument, Language, it is at once individual and social. Each man speaks in virtue of the functions of vocal expression, but also in virtue of the social need of communication. The words spoken are not his creation, yet he, too, must appropriate them by what may be called a creative process before he can understand them. What his tribe speaks he repeats; but he does not simply echo their words, he rethinks them. In the same way he adopts their experiences when he *assimilates* them to his own. He only feels their emotions when his soul is moved like theirs; he cannot think their thoughts so long as his experiences refuse to be condensed in their symbols. But because he has a similar vocal function, and a similar verbal store, he can reproduce and understand their novel combinations of speech; and because he has similar experiences he can understand their novel combinations of thought, adopting both into his own

and getting his range of fellowship enlarged. Besides the circle of sensations, appetites, and volitions directly related to his personal needs, each man has a wider circle of sentiments and ideas connecting his personal needs with the needs of his fellow-men, and embracing past and future. These constitute a large part of his system of thought.

119. Language belongs essentially to the community by whom and for whom it is called into existence. In like manner Thought belongs essentially to Humanity. As every spoken word presupposes an intelligent hearer, so every conception implies an impersonal Reason representing relations that are essentially impersonal. A solitary man would feel, and think, and will; but he would no more fashion his feelings, thoughts, and volitions into conceptions which are the formulas of his knowledge than he would articulate them in words.

Further, the experiences of each individual come and go; they correct, enlarge, destroy one another, leaving behind them a certain residual store, which, condensed in intuitions and formulated in principles, direct and modify all future experiences. The sum of these is designated as the individual mind. A similar process evolves the General Mind—the residual store of experiences common to all. By means of Language the individual shares in the general fund, which thus becomes for him an impersonal objective influence. To it each appeals. We all assimilate some of its material, and help to increase its store. Not only do we find ourselves confronting Nature, to whose order we must conform, but confronting Society, whose laws we must obey. We have to

learn what Nature is and does, what our fellow-men think and will, and unless we learn aright and act in conformity, we are inexorably punished.

120. While calling attention to the General Mind, it may not be superfluous to warn some readers against a metaphysical fallacy. The abstraction Mind, once extricated from the concrete facts of Sentience, is by logical necessity immaterial, simple, one; for it is a symbol like Virtue, Cause, Number, &c. As a symbol, it has concrete realities for its significates; but this does not suffice for those who, having personified the abstraction, accept it as a *res completa*, which may be studied apart from its significates. Not only has this mistake been committed with respect to the individual mind—which has in consequence been studied apart from the organism—but also, though less frequently, with regard to the General Mind, which has been detached from the individuals, not merely as an abstraction, but as a *res completa;* and thus the World-process has been assigned to a Soul of the World.

We have not here to discuss such metaphysical questions. For our present purpose, it is enough to recognise that there are men, and there is Humanity: there are minds, and besides the individual minds there is the Human Mind. With the individual point of view we must always combine the general. Thus, we may note the deficiencies and peculiarities of various minds, and such observations may greatly facilitate our analysis; but they are noted as exceptions, they are excluded from the General Mind; just as errors, though logically arrived at, are excluded from Logic. If we rise from particular facts to

general facts, when once the generalities have been reached, we apply them to all particulars, to note in how far they accord with the generalities. Only when this application is congruous, and the new particular is brought under the general head, do we consider it explained. If the new fact is inconsistent with general experience, we seek its conditions in some exceptional details. For example, the general fact that mutton is excellent food for man causes us unhesitatingly to conclude that the first hungry man we have to feed may safely be fed with mutton; but it sometimes occurs that the hungry man is one to whom mutton is a poison. We must not ignore or reject such experiences; we must seek the points of difference in the organic conditions; and these, when found, will form a new generality. Thus also with mental differences. We feel in ourselves and observe in others certain sequences of sensation and thought, which we detach as uniformities (laws) of Sensibility and Logic. Extending our researches over various races and epochs, we come upon seeming contradictions to these uniformities. We then conclude that men do not always feel alike under like external circumstances.* They may be deficient in

* "La lecture des ouvrages écrits à l'étranger sur les maladies nerveuses m'a souvent fait songer à certaines études de pathologie comparative, qui s'appliqueraient à rechercher curieusement les altérations que les types morbides de cette classe peuvent éprouver, sans rien perdre cependant de leur autonomie, suivant les climats, les nationalités, les races, &c. Le plus souvent on n'aurait à relever, dans une étude de ce genre, que des nuances délicates; mais la déviation peut aller parfois jusqu'à s'accuser par des modifications plus ou moins profondes, alors même qu'il s'agit seulement de pays limitrophes et placés sous des latitudes très-comparables. Ainsi—pour ne citer qu'un exemple que j'avais encore tout dernièrement sous les yeux, et c'est là un sujet que je me réserve de développer quelque jour,—la névrose hystérique, en Angle-

certain sensibilities, so that they will react differently under stimuli. They may be deficient in certain experiences, so that they are unaffected by what profoundly agitates others. Noting these exceptions, we seek their conditions, and these when found are erected into new uniformities. And out of all the uniformities there is formed a conception of the Human Mind.

121. Our search for the conditions, whether general or special, is biological or sociological. And, since men differ more in their social relations than in their physiological relations, it is in the former that we should first seek the explanation of intellectual and moral differences not obviously assignable to differences of structure. It is here also we must seek for many uniformities. Men living always in groups co-operate like the organs in an organism. Their actions have a common impulse and a common end. Their desires and opinions bear the common stamp of an impersonal direction. Much of their life is common to all. The roads, market-places and temples, are for each and all. The experiences, the dogmas, and the doctrines are for each and all. Customs arise, and are formulated in laws, the restraint of all. The customs, born of the circumstances, immanent in the

terre, diffère assurément de ce qu'elle est en France, par des traits symptomatiques souvent très-accentués. L'hémianesthésie totale, entre autres particularités dignes d'être relevées, et aussi le grand mal hystéro-épileptique, ces phénomènes qui dans l'espèce sont, on peut le dire, vulgaires chez nous, ne s'observent que très-rarement de l'autre côté du détroit, tandis que les contractures permanentes des membres et bien d'autres symptômes du même ordre, désignés quelquefois par nos voisins sous le nom d'*hystérie locale*, y sont au contraire chose commune."—CHARCOT: Preface to the translation of *Rosenthal's Diseases of the Nervous System.*

social conditions, are consciously extricated and prescribed as the rules of life; each new generation is born in this social medium, and has to adapt itself to the established forms. Society, though constituted by individuals, has a powerful reaction on every individual. "In the infancy of nations," said Montesquieu, "man forms the state; in their maturity the state forms the man." It is thus also with the collective Experience of the race fashioning the Experience of the individual. It makes a man accept what he cannot understand, and obey what he does not believe. His thoughts are only partly his own; they are also the thoughts of others. His actions are guided by the will of others; even in rebellion he has them in his mind. His standard is outside. That is *true* which all men affirm, and no experience contradicts: *consensus gentium*. If a man cannot see this truth, he is pronounced to be an anomaly or a madman. If he does not feel what all feel, he is thrown out of account, except in the reckoning of abnormities.

122. Individual experiences being limited and individual spontaneity feeble, we are strengthened and enriched by assimilating the experiences of others. A nation, a tribe, a sect is the medium of the individual mind, as a sea, a river, or a pond is the medium of a fish: through this it touches the outlying world, and is touched by it; but the direct motions of its activity are within this circle. The nation affects the sect, the sect the individual. Not that the individual is passive, he is only directed; he, too, reacts on the sect and nation, helping to create the social life of which he partakes. The laws of Human Nature constitute a Social Mechanism analogous to that indi-

vidual Mechanism which is modified by Experience. Civilisation is the accumulation of experiences; and since it is this accumulated wealth which is the tradition of the race, we may say with Comte that the Past more and more dominates the Present, precisely as in the individual case it is the registered experiences which more and more determine the feelings and opinions.

123. Human Knowledge is pre-eminently distinguished from Animal Knowledge by this collective experience. I have never in my own person experienced the effects of a poison, but I have made the experience of others my own, have taken it up into my system of knowledge, and I act upon it with confidence. I have never seen the Ganges, nor measured the earth's diameter; but these enter into my world of experience, and regulate my conduct, with the same certainty as my direct experience of the Trent or the acreage of my property. What I have directly experienced by sensible contact forms but a small part of my mental wealth; and even that part has been largely determined by the experience of others. The consolidations of convergent thought in Social Forms, scientific theories, works of Art, and, above all, Language, are incessantly acting on me. Ideas are forces: the existence of one determines our reception of others. Each novel impression has to be assimilated by the existing mass of residual impressions; each new conclusion has to be affiliated on the old, dovetailed into the rest, made congruent with the system of thought. In the great total of collective Experience,—as in that of the individual,—absurd perversions and wild fancies take their place beside

exact correspondences of feeling and fact, and truths that are unshakable; it is a shifting mass of truth and error, for ever becoming more and more sifted and organised into permanent structures of germinating fertility or of fossilised barrenness. Our mental furniture shows the *bric à brac* of prejudice beside the fashion of the hour; our opinions are made up of shadowy associations, imperfect memories, echoes of other men's voices, mingling with the reactions of our own sensibility. Thus it is that a mass of incoherent and unreasoned premisses are brought to bear on the evidence for any new opinion, as for any novel fact: this is the unrecognised standard by which the conclusion is determined. The most rational of men mingles with premisses logically assignable obscure premisses of which he can give no account. It is only in the exact sciences that conclusions are clearly reasoned out. The student comes to Mathematics unperverted, in so far as he brings with him no unmathematical preconceptions liable to disturb the demonstrations. Each step in advance is seen to be merely the writing out of what has been already demonstrated or intuited, added to the novel data which may also be intuited or demonstrated; there is neither vagueness nor oscillation in the premisses, there can, therefore, be none in the conclusion. Not so in the Moral Sciences or in the judgment of ordinary affairs. Here the evidence is complicated, uncertain; the premisses lie partly amid obscure experiences of the past, and partly in judgments taken up by hearsay or precipitation, and fixed in tendencies by long familiarity. So that the inquirer, who has in all sincerity examined the evidence proffered for the new

opinion, seeking far and wide for the data, has, in fact, been throughout interpreting this evidence by the standard of his formed conviction. If he began his search with a belief in the miraculous, he readily assimilated all the details which confirmed that belief, rejecting the rest as incongruous with his knowledge. If he began with a conviction that miracles are incredible, no amount of evidence will shake him; he will simply regard the evidence as imperfect. A deep longing for some direct proof of existence after death has made hundreds of people accept the grossest impostures of "Spiritualism," impostures which contradicted the most massive experiences of the race, and which had nothing to support them save this emotional credulity acting where direct knowledge was wholly absent. Because men did *not* know how the appearances were produced,—the means of knowledge being carefully withheld,—they willingly accepted the explanation which suited their preconceptions, disregarding the incongruous and often degrading circumstances which would otherwise have repelled their belief. And that this is so may be readily proved. For in the absence of all positive knowledge how the tables were moved, or the lights and flowers were produced, there could be no ground for concluding that these effects were produced by spirits. What data have we for supposing that spirits are thus occupied? All would reject the hypothesis that the agent was an invisible dragon, not because they know more about spirits than about dragons, but because the idea of the dragon is incongruous with their preconception and with their desire.

124. Conceptions once assimilated by the General

Mind become "necessities of thought" for the individual, just as Railways, once established, become necessities of transport. The rules of Arithmetic were late in mental evolution, and are still inconceivable by the bulk of mankind; but having been formulated and incorporated in the General Mind, they are easily learned by infants, and by philosophers declared to be "necessities of thought." The doctrine of evolution is becoming such a "necessity of thought;" only a few years ago some of its present advocates were among its bitter opponents. The idea of Progress was no more suspected by our ancestors than the existence of Magnetism. From the speculations of the few it has passed into the commonplaces of the many.

That conceptions once incorporated in the General Mind become forces which coerce the individual is conspicuous in the terrible effects due to the idea of "saving souls." This monstrous fiction of speculative logic scattered the amassed wealth of Grecian and Moorish culture, repressed for centuries the search after truth, made Doubt a sin, and placed the investigation of Nature on a par with magical incantation. Nor did it end here. It embittered and embitters in many ways the lives of those whom it professed to save, and did its best to make Hell a reality in this world for those who ventured to doubt its reality in another. Happily the power of conceptions is not limited to disastrous errors, but extends to beneficent truths. If irrational conceptions have made man miserable and kept him ignorant, rational conceptions have made him less miserable and more wise. Our pressing need to understand the facts of this universe in which we live has forced us to encourage the pur-

suit of truth. New and larger conceptions of man's nature and destiny have been evolved. These, slowly altering the structure of the General Mind, alter the Social Forms which express it, and both react on the individual.

Parenthetically, let us note the vast change in the conceptions of the world and of man which have issued from the discoveries of Copernicus and Cuvier, by substituting Evolution for Creation. And to the study of the History of the World has succeeded the History of Mind. Every little detail which tells of the mental condition of ancestral races is now of priceless value. Formerly men dug up ruined cities and opened ancient tombs in the search for golden ornaments or works of art. Now they dig with greater eagerness for flints and the rude implements of prehistoric races, because these throw light on the evolution of Mind.

CHAPTER X.

THE MENTAL FORMS.

125. The recognition of Collective Experience combining with inherited tendencies in the formation of Experience for the individual, will perhaps be interpreted by Kant's admirers as an illustration of his doctrine of Mental Forms, or *à priori* constituents of the mind. Kant taught that all knowledge arises *in* individual experience, but not all *out* of it. There are other factors, and these are transcendental and *à priori;* not drawn from experience, since they are its necessary conditions, and therefore precede it; not dependent on the organism, nor reducible to sensible terms, but constituents of mind before mind comes in contact with Nature; and it is this contact of mind with Nature which is experience.

Kant's primary purpose was not to expound a psychological doctrine, but a metaphysical theory of knowledge. He wished to fix the limitations of inquiry by assigning the limits of possible knowledge. So little psychological investigation does he attempt, and that little so imperfectly, that even when dealing with the sensible data, it is not to Feeling as such, nor to its evolution, that he refers, but simply to its relation to Knowing. He starts with the developed products, and never pauses to investigate their production—physiological or psychological. He takes the

mind of the adult and cultivated classes. Therein he recognises certain modes of acting which determine the possible actions, as the anatomist recognises certain forms of structure which determine bodily functions. These Forms of Intuition and these Rules of Reasoning shape our experiences and determine our knowledge as inexorable conditions: we can no more think in contradiction to them than a solution can crystallise into angles that are round.

126. Here, as in so many cases, we see the consequence of operating on abstractions without a clear and abiding sense of the concretes they symbolise. Mind apart from Nature is one of these; Experience is another. The first is a metempirical figment when it is not a logical abstraction. The second, when reduced to its concretes, is the total of certain classes of phenomena manifested by a living organism: it involves, therefore, on the one hand, a sentient mechanism having certain modes of reaction, and, on the other, an external medium having certain modes of stimulation. The experiences of this organism are the modifications it undergoes. These are generalised in the abstract term Experience. That all phenomena have their conditions is a truism; but the conditions are really *immanent in*, and only theoretically *prior to*, the results. There are not conditions existing apart, and results called into existence by them; but the conditions, ideally separated as components, find their expression in the resultant. We may ideally separate the organism and its inherited modes of reaction from one and all of the particular stimulations on which it reacts, and in this sense regard the reacting organism as a condition of the reaction, and the reaction as a

condition of the resulting sensation or movement. We know what we are doing by such distinctions. But to suppose that the experiences which are results of stimulation and reaction have any other components than these is a grave error; and to detach Experience from the Organism is merely an artifice of exposition; while to detach from the Organism its modes of reaction, erecting these into Mental Forms which have no physical basis, is what science cannot accept, even as an artifice.

127. No physiologist will deny that the organism has an inherited structure which causes it to react in particular ways, and that this structure has been determined by ancestral modifications; that is to say, ancestral modes of reaction help to fashion the individual modes of reaction, and the stored-up wealth of collective experience enriches the experience of succeeding generations. It is in so far the condition of possible experience for the individual that without it his reactions would have been different. Kant first separates Experience from the concrete facts of which it is the abstract expression, detaches it from the organism and the modes of reaction which belong to the inherited structure, and then argues that without the modes of reaction such as Space and Time represent, no experience is possible. Finding that these general Forms of Sensibility cannot be given in individual sensations which presuppose them, he argues that they cannot belong to the sensations, nor to the sentient mechanism, *ergo* they must be *à priori* constituents of Mind.

128. This doctrine has exercised a strange fascination over men's minds, and I cannot let it pass unchal-

lenged. The psychologist is as well entitled to postulate Laws of Thought—or Mental Forms—as the Physicist to postulate Laws of Motion and Laws of Nature. But both should know what it is they are postulating, and why they do it. So little do the generality of men know this, that they interpret these abstract expressions as the conditions and determinants of the concrete phenomena from which the expressions are abstracted. On this interpretation Laws pre-exist; the movements and other phenomena issue from them. There are thus not only the movements, but Laws of Motion superadded to all the conditions of movement. Thus crudely stated, the fallacy is obvious. From the infinitely varying conditions we extricate certain constants, and to these we affix a mathematical expression. The parabola described in the course of a cannon-ball, the eclipse of the planetary orbit, the curve of a wave, &c., are mathematical expressions: it is absurd to personify these as motor agencies. In like manner, from the varieties of Feeling we extricate certain constant appearances which we call Laws of Sensibility, Forms of Thought, Logical Rules. These we describe and classify, as we describe and classify the planes of cleavage of crystals. But to suppose that these laws have an *à priori* independence, and render our feelings and knowledge possible, is equivalent to the supposition of planes of cleavage floating about in the Cosmos, and when descending upon certain solutions fashioning them into crystals.

129. It has been thought a great achievement of Kant to have separated the Form of Knowledge from the Matter of Knowledge, and to have made the first

the *à priori* condition of both Knowledge and Experience. I see nothing in it but the common error of confounding logical with real distinctions, and the revival of the Aristotelian doctrine of Form and Matter which the advance of science had pushed aside. To me it is significant that Kant nowhere raises the question whether animals have likewise these Mental Forms as *à priori* conditions of their experiences and cognitions. If he denied the existence of these forms, he must have implicitly denied that animals had experiences of space and time relations. This being too absurd a notion for us to attribute to him, we have no alternative but to assume that he endowed animals with the forms. On this supposition we should have to inquire whether he held that animals had minds independent of their organisms, or minds that were but the activity of the organisms? On the latter alternative his notion of the universality of these forms receives a rude shock; for if the intuitions of space and time are the activities of the organism, they must differ in animals and men in accordance with differences of structure. Hence while animals of a much simpler structure than ours would only intuite space of two dimensions, a structure more complex than ours would intuite a space of four, five, or *n* dimensions—a conclusion which the Imaginary Geometry of Lobatschewsky, Riemann, and Helmholtz shows to be acceptable.

But Kant carefully avoids risking his position by a reference to organic structure. He eliminates all concrete conditions. He will not even admit ancestral influences. His forms are pure abstractions, and he declines to predicate anything of them except their

à-priority and universality. He finds the forms as facts, and rejects all attempts to reduce them to their factors. It was open to him to regard Mind as a function of the organism, and the Mental Forms as the peculiar modes of reaction organised in ancestral modifications. He rejects this. He will not even admit innate ideas.*

130. Observation has shown that we do not bring on our entrance into the world definite intuitions of space, nor do our first sensible impressions call forth such intuitions; they are slowly formed. To answer this by saying that we bring with us the abstract form of Space, which renders possible the evolution of concrete space experiences, is to place the general conception before the particulars it generalises. Applied to our motor-intuitions the fallacy is obvious. No one, seeing that we do not at birth bring definite intuitions directing the movements of our limbs, will assert that we bring with us a Form of movement which is anything more than an abstract expression for all the motor conditions actually present in the organism. The theory of Experience demands that a mechanism be ready to respond to stimuli; and the theory of the Mechanism demands that an experience

* Yet much of his argumentation implies something very like it. For a striking example, consider his explanation of the cries and struggles of the new-born infant. These, he says, are expressions not of pain but of rage—"rage because the infant *wishes* to move, yet *feels its incapacity as a restriction whereby it is deprived of its freedom*" (*Anthropologie*, p. 323, note). HEGEL transcends this. He sees in the infant's squalls and struggles "the revelation of man's higher nature." By such activity the infant manifests himself as "penetrated by the *conviction of his right* to claim the satisfaction of his needs from the outer world, and *that the independence of this outer world vanishes in the presence of man*, sinks into servile insignificance. Hence the impetuous, imperious tone" (*Encyklopædie*, W. vii. 93).

of some kind should have come into being with the stimulation. Unless we brought with us a mechanism so constituted as to be capable of space-feelings, no contact with external objects would excite them. But it is a mistake to detach this capability, personify it, and call it the Pure Form of space-feelings, anterior to and independent of the stimuli and the mechanism which condition such feelings.

131. In conclusion, we may adopt Kant's phrase that "all Knowledge has its rise *in* Experience, but not all *out* of Experience," if we abstract Experience from the sentient mechanism with its inherited modes of reaction, or if we consider only that to be Experience which the individual himself has sensibly reacted on. The last chapter showed how it is the great human privilege to assimilate the experiences of others. Our feelings are products of our personal stimulations, and of the residua of ancestral stimulations. Our knowledge is the product of our own experiences, and of the stored-up experiences of our fellows. The individual savage has no knowledge of the Law of Causality; there can be no capability of conceiving it until experiences have evolved it, and it has taken its place in the collective thought of the race. The savage cannot be made to think that there can be no variation in an event when there is no variation in its conditions. The necessity of causal sequence is inconceivable to him, because his experiences seem to contradict it. But that which *he* cannot be made to think becomes in time so organised in the General Mind as an axiom which it is impossible to doubt, that philosophers are found who proclaim it a fundamental and *à priori* Law of the Mind.

CHAPTER XI.

ANALYSIS AND SYNTHESIS.

132. UNDERSTANDING that Method demands the co-operation of Introspection with Observation for the collection and collation of data, we have further to specify the range and the limitation proper to the artifice of Analysis. Taking our stand on the position that whatever is knowable must lie within the range of Experience, we regard every expression which cannot be reduced to lower terms as an ultimate of Speculation; and this even should there be a suspicion that possibly at some future day it may also be reducible to lower terms. Force is an ultimate. Sensibility is an ultimate. We cannot reduce either of these to lower terms: we can only say they *are* what they *signify*. But Experience is not an ultimate, for it can—ideally—be analysed into components. Nor is Consciousness an ultimate, if understood as a special Mode of Sensibility.

The psychologist therefore will no more ask, What is Sensibility? than the physicist asks, What is Electricity? Describing what Electricity *does*, the physicist tells us what it *is*: its manifestations he can classify and formulate in laws. The psychologist must be equally reserved. Recording the facts, he will seek their ascertainable conditions by observation

and experiment, but not seek these "in the field behind phenomena." To get at the conditions he must employ the artifice of analysis, he must do as the child spontaneously does with every object which comes within its grasp, namely, endeavour to pull it to pieces "to see what it is made of." But this procedure needs correction. The mind is *not* made of separable pieces. Each piece has significance only in its relation to the others.

133. Even in physical research the analysis which decomposes a total into several components must always be followed by a synthesis which reconstructs the whole, and thus, restoring all the suppressed conditions, reuniting what provisionally was separated, views the parts in the light reflected from the whole. No fact is explained by the enumeration or exhibition of its factors as *isolated* elements; only by these in their combination and mutual dependence. Comte was guilty of an oversight when he defined the chemist's problem to be that of "determining the properties of compounds by the properties of their components," for this is impossible. The properties of water could never be determined by enumerating the properties of oxygen and hydrogen; no salt is discernible in its acid, nor in its base. The properties of compounds must be observed in the reactions of the compounds. We may resolve these compounds into their components, but these are then new totals, and have forfeited all their qualities as components, the oxygen being no longer watery. Only by reconstructing these, restoring the elements which analysis has dissipated, can we get the water. We have taken it to pieces, but unless we know *all* the pieces, and

the way these are arranged, we cannot see the whole in the parts.

Still greater is the difficulty in psychological research. Here observation is always that of resultants, *never* of components. Real analysis, such as that of the chemist, is impossible. The components have no observable existence: they are only inferred. I mean, that a feeling cannot be taken to pieces like a salt, these pieces separately studied, first isolated, next in combination. All the stages of a process must be completed before the feeling emerges. In no *one* stage is it a feeling. The separation, therefore, of the stages, the analysis of the feeling into its elements, is ideal only. Moreover, each of these ideal elements has a history. The elements of an inorganic object, the moments of a dynamic process, are unchangeable—that is to say, the oxygen torn from rust, from water, or from an animal tissue, reappears with unaltered and unalterable characters after every fresh combination. Not so the elements of a feeling; the very tissues which are its physical basis are in incessant change.

134. Organic functions, we must often insist, are unlike the functions of machines, which result from combinations of elements that have no natural and indestructible connection. The organism is evolved: one part emerges from another, all parts are interdependent. The functions of the organism are merely specialisations of the properties common to all its parts. Hence it is that Sensibility and its Modes, being among the many specialisations of vitality, cannot be likened to steam, or any other external motor; nor can Experience be likened to any complex of parts

put together: it is no mosaic of different elements; it is a living, developing, manifold unity.

But, recognising this, we are still compelled to treat it as if the parts were separable. Thus it is we speak of impressions as if they were events apart from sensations, and sensations as if they had an isolated existence apart from the sensorial disturbances called emotions and cognitions. An impression may be considered apart as one stage in a complex process; a sensation as another stage; a perception as a third. But in reality, to understand an impression as a psychical phenomenon, it must be seen in its relations to an ultimate sensorial reaction. Nor can any sensation come into existence without involving the fundamental functions we analytically ascribe to Thought. Hence the radical confusion of the doctrine that Thought is *transformed* Sensation; which is the analogue of the still deeper and more widely spread confusion that Sensation is the transubstantiation of a physical movement.

135. Had the Sensational School paid more attention to Biology, it might have rectified its hypothesis so far as to present all mental phenomena in the light of Modes of a common Sensibility. It would then have welcomed the aid of Analysis, but recognised its artifice. It would not have overlooked the relation of organ to organism, of part to the whole; nor have fallen into the error of treating the organism as a *mosaic*, or assemblage of organs, built up bit by bit, acting bit by bit; an error the consequence of which is seen in the conception of the Mind as an assemblage of impressions, a mosaic of experiences. Biology tells

us that the organism, though differentiated into organs, always is a total which acts through its parts: each organ derives its significance from its connections with the others; none has a function irrespective of the rest. And so of mind. The notion of a *tabula rasa*, on which the Senses inscribe their impressions, is unbiological. A percipient organism must exist before impressions can become perceptions. In Condillac's celebrated illustration of the statue which would perceive the odour of a rose (he says it would *be* this odour) there is the suppressed premiss of an organism adapted to the perception. In the absence of such a percipient factor, the statue can no more lawfully be imagined as smelling the rose than it could be imagined as digesting beef.

136. The reader will doubtless be so little disposed to question these remarks that he may complain of their being urged upon him. Yet, however cordially he may assent to them, he will, on inquiry, find that no error is more common than that which they signalise. Facts are constantly confounded with one or more of their isolated factors, effects assigned to one out of a group of conditions, premisses suppressed and never restored, and organs credited with the performance of actions in which they only play a subordinate part. In subsequent pages we shall frequently have to point this out.

When once we have made clear to ourselves the nature of the aid derived from Analysis, we may employ the artifice in confidence. Ideally we decompose the organism into its organs, the mind into its functions and faculties; and these again we decompose into their components: physical, physiological, psychological.

We study the stimuli, the mechanism, and the experience; that is, the external medium in its action on the organism, the reaction of the organism, and the feeling which is the subjective aspect of that reaction. The organism, although a system of forces having its motor within (§ 77), is in connection with external forces, and is primarily set in action by them. For example, the motion of the air disturbs the equilibrium of the auditory apparatus which has its own special mode of reaction, and this in turn disturbs the general centre or Sensorium. These three ideally separable stages of one neural process may be studied separately, although all three are necessary elements, any one of which varying will cause a corresponding variation in the final result. Without the pulses of air, no sound; without the apparatus disturbed, no sound; without the Sensorium, no sound.

137. Strictly speaking, the foregoing statement is true only of the original and normal production of Sensations. It needs qualification when we take into account the subsequent reactions of the *already modified* Sensorium. Here we find Experience as a factor. By it sensations may be reproduced without the cooperation of some of the original conditions of production. We have, then, "subjective sensations" due to other stimuli than those of the sense-organ, revivals of residua left by the action of the sense-organ.

137ª. But not now to dwell on this point, let us note the scientific advantage of studying the physical stage of the process, the data of which are measurable and admit of easy demonstration. The psychological stage has no such advantages, but, as has been said,

compensates *exactness* by *certainty;* if we can never know a feeling quantitatively, we know it qualitatively with unrivalled certainty. By this exactness on the one hand, and this certainty on the other, it has been found possible to introduce quantitative relations between stimuli and sensations, and a new branch of science, called Psychophysics, has arisen. With regard to the intermediate or physiological stage, there is at present no such exactness, no such certainty. What takes place in the nervous system under stimulation and reaction is neither demonstrable to Sense nor discernible by Intuition; it is, and will long remain, mere guesswork. This may seem a hard sentence to those who have been relying on the hypothesis of vibrations, wave-movements, chemical or electrical processes, cell-functions, seats of sensation, seats of emotion, seats of volition, and seats of thought. But it is a sentence which will be confirmed by every one who has seriously investigated the evidence of such hypotheses. All that has gained currency on this subject the student will do well to accept as provisional imagery which may assist exposition, not as data from which conclusions may be drawn. The hypotheses are not terms of knowledge, but terms to fill our gaps in knowledge. The mathematical precision of Optics and Acoustics is confined to the physical stages of the seeing and hearing processes; where the physical passes into the physiological the precess escapes observation. Between the physical and the psychological moments we know there intervenes a neural moment, a change in the sensory tract; but *what* that change is we do not know. We know, however, that it is not a process

which can be identified with the physical process: its movements cannot be the same as the movements of the external stimulus. The physicist splits a beam of light by a prism and measures the different wave-lengths of its constituent colours; each of these wave-lengths represents different degrees of stimulation. Hence the conclusion that each colour is the product of each wave-length. We learn that the effect of 450 billions of impacts in a second is the sensation of red; of 589 billions, the sensation of green; of 790 billions, the sensation of violet. This seems quite satisfactory until we learn that although such vibrations originate such sensations, it is through some intermediate agency which does not vibrate in these ways, but which is capable of effecting the sensations by vibrations that are demonstrably different. And in two examples this is conspicuous. First, in the fact that violet, which has 790 billions, according to the scale of the spectrum, is producible also by the blending of red and blue, that is, of 450 and 589 billions; and white, which contains all the colours of the spectrum, is producible by combinations of greenish blue with scarlet red, or of greenish yellow with violet, or of yellow with ultramarine. Note especially that the whites thus variously produced are indistinguishable as feelings, but are physically distinguishable by their different reactions—the photographic plate on which falls a white light composed of red and greenish blue yields a black reaction, whereas under the yellowish-green and violet combination it is very bright. Objects illuminated by these different whites take on very unlike colours. The second example to which allusion was made is the fact of *subjective* colours.

138. Further, a sensation does not accurately correspond with the physical stimulus except through the physiological intermediates, for the colour of an object is found to vary with the portion of the retina on which it falls: the geranium flower, which is scarlet at the central portion, is at the periphery indistinguishable from its green leaves. As with colour so with form; a subjective transformation takes place. The optical image of a house, formed on a camera obscura or on the retina, is not the mental image: the optical image is excessively minute, is inverted, and has only two dimensions, whereas the mental image is large, erect, and has three dimensions.

We thus see that savants who rely on the physical analysis without adding the analysis demanded by Psychology fall into the opposite error of that fallen into by Goethe, when, relying exclusively on the psychological, he combated Newton's physical hypothesis. Both analyses are required. And let us remember that in the attempt to connect these two through the molecular changes in the nervous system we are thrown upon what is very imperfectly known. Between the structure of the eye or ear and the sensation of sight or sound there is a demonstrable connection, every minute variation in structure being accompanied by some variation in feeling: the one is, therefore, rightly regarded as a function of the other. Between these organs and the central nervous system there is likewise a demonstrable connection, any interruption of which brings an interruption in the functional operation. So far Physiology reaches; but there its grasp relaxes. Between the structure of the brain, or any other portion of the central system,

and the sensations, perceptions, ideas which are its activities, no such connection is discernible. I mean, that we know of no variation in cerebral structure which uniformly corresponds with a variation in feeling. Possibly, at some future day, there may be discovered precise relations between central structure and mental functions, analogous to those now known between the structure of the eye and the function of vision. But that day seems distant. All that Physiology can at present assure us of is, that Mind is a function of the organism; consequently that certain changes in the organism correspond with changes in the mental states.

139. Herein lies the necessity of a constant study of the organism as a directly available object of observation and experiment. In proportion as this study becomes minute and exact, the facts discerned by Introspection become intelligible and explicable. Not only so, but with this knowledge we acquire the power of intervention. To know that the integrity of the eye's structure is essential to normal vision, and that certain defects in crystalline lens, vitreous humour, optic tract or brain, bring with them defects in vision, puts us on the track of a remedy for such defects, which we correct by glasses of a particular curvature or drugs of a particular efficacy.*

140. Analysis, then, is a potent and indispensable instrument; but its right use must be understood. We laugh at the man mentioned by Hierocles who presented a brick as a specimen of his house: but

* The use of proper spectacles has also been the remedy of obscure nervous disorders never before suspected to have any relation to visual defects.

our laughter does not drive us from the same *naïveté* in taking a part for the whole, isolating an organ from the organism, and the organism from its medium. Having once accepted such errors, we need not be surprised if they are extended, and if particular cells in the brain are made the seats of thought. In reading certain physiological statements respecting the localisation of mental functions, I have asked myself whether this premature physiological topography will not, by-and-by, localise the seat of Life in the heart, Sensibility in the pericardium, and Motility in its muscular tissue?*

One final remark. Psychological Analysis has for object not only the adult mind with its acquired aptitudes, but also the stages of evolution through which that mind has passed. These two points of view are sometimes confused; and these well-marked differences in the phenomena are sought to be obliterated by showing how they emerged from a common ground. An illustration will make this plain. To the physiologist no two functions have better marked distinctions than Breathing and Swimming; nothing but

* As a specimen of the purely fanciful hypotheses, consider this propounded by JÄGER in his *Handbuch der Zoologie*, 1877, ii. 339: "The cells of the cerebral cortex are the seats of Sensation, because they are many; but the seat of Consciousness is the neuroglia, because that lies between the cells, and is one undifferentiated substance!" As another specimen of the purely fanciful, with a strange confusion of physiological and psychological terms, consider this proposition laid down in the *Rapport sur le Concours de* 1868, presented to the Academy of Medicine: "Noûs admettons trois grands centres superposés l'un à l'autre, placés suivant une progression décroissante. Audessus de tout, le Moi; puis au dessous, les Instincts avec les facultés du second ordre; ensuite la Moëlle." Psychologists reading such passages may be excused if they turn away with impatience from the aid offered them by physiologists.

confusion could result from speaking of the one in terms of the other. To the morphologist who is not dealing with the established functions, but with their evolution, it is of great interest to trace in the Crustacea the modification of the respiratory organs into swimming organs, and to show how in the Infusoria the same organs are employed for both functions. In like manner, it is a gross confusion to speak of Sensation and Thought, Instinct and Intelligence, Voluntary and Involuntary actions, as if these terms did not represent phenomena markedly distinct; but from the standpoint of genesis it is needful to show that all are Modes of Sensibility, and therefore all fundamentally the same.

THE END.

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